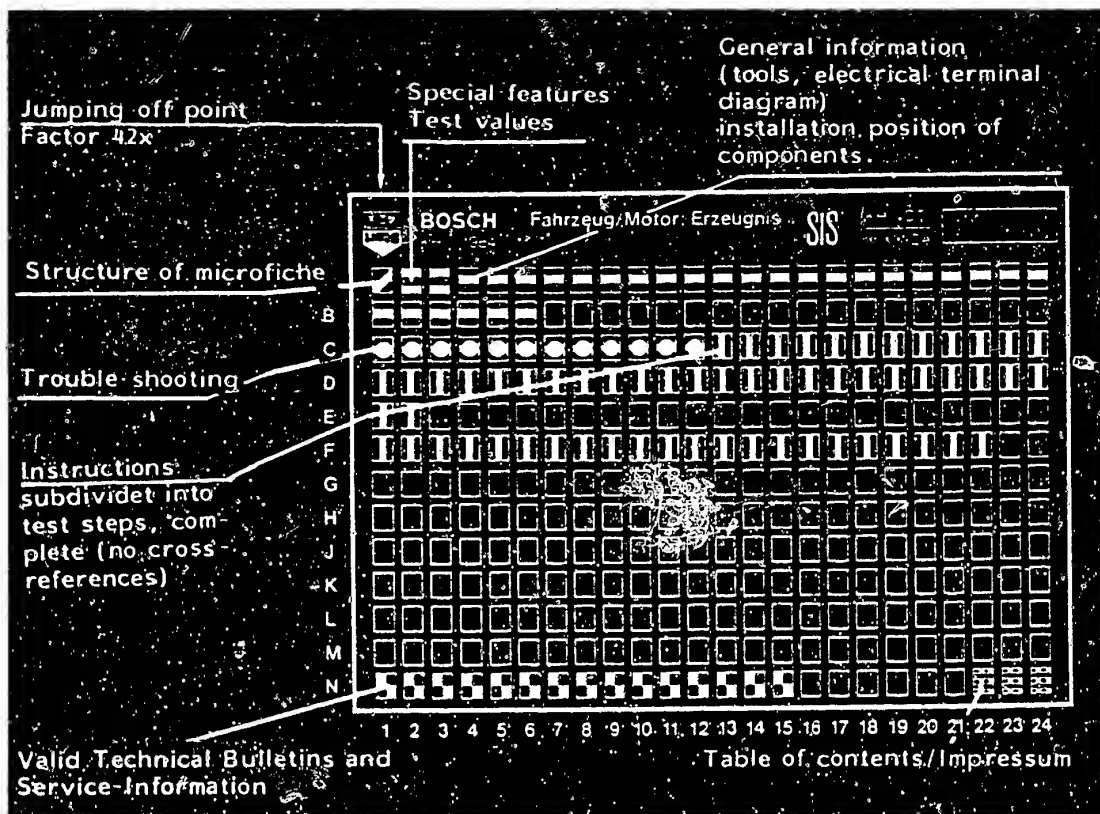


## Structure of microfiche



1. Read from left to right
2. Title of microfiche (appears on each coordinate)

<b>E16</b>	Product/component/test step
	Vehicle/engine

↑ Coordinate

3. Limits of section



Beginning



Mid-section



End



One-page section

4. References to relevant test steps in test specifications; coordinate e.g. C6

**C6**

**A1**

Trouble-shooting program



## 1. Special features

Peugeot 505 Turbo - Sweden/Switzerland version (1984 )  
with charge-air cooler is equipped with:

Trigger box	0 227 100 111, (with current .. 123 } limitation)
Ignition coil	0 221 122 317
Timing-advance unit	0 227 921 019
Knock control unit	0 261 201 002
Knock sensor	0 261 231 001

## 2. Test specifications

Ignition coil, primary	0.7...1.2 $\Omega$
Ignition coil, secondary	6.9...11.9 k $\Omega$

**C15**

Knock control unit power supply	9 V ... $U_B$
------------------------------------	---------------

**D10**

Knock sensor	270 ... 330 k $\Omega$
Knock sensor tightening torque	11 ... 15 Nm

**D12**

Basic ignition timing at 4000 $\pm$ 100 min <sup>-1</sup>	44° BTDC
--	----------

To prevent incorrect adjustment,  
be sure to perform test according  
to coordinates given on right.

**C21****D19**

Pressure switch	< 80 mbar approx. 0 $\Omega$ > 120 mbar $\infty \Omega$
-----------------	--

**D20****A2**

Special features/Test specifications  
Peugeot



## Test specifications (continued)

Trigger box power supply	12...14 V
-----------------------------	-----------

**D22**

Ignition coil power supply	$\geq 10$ V
-------------------------------	-------------

Primary voltage with engine idling	290...400 V
---------------------------------------	-------------

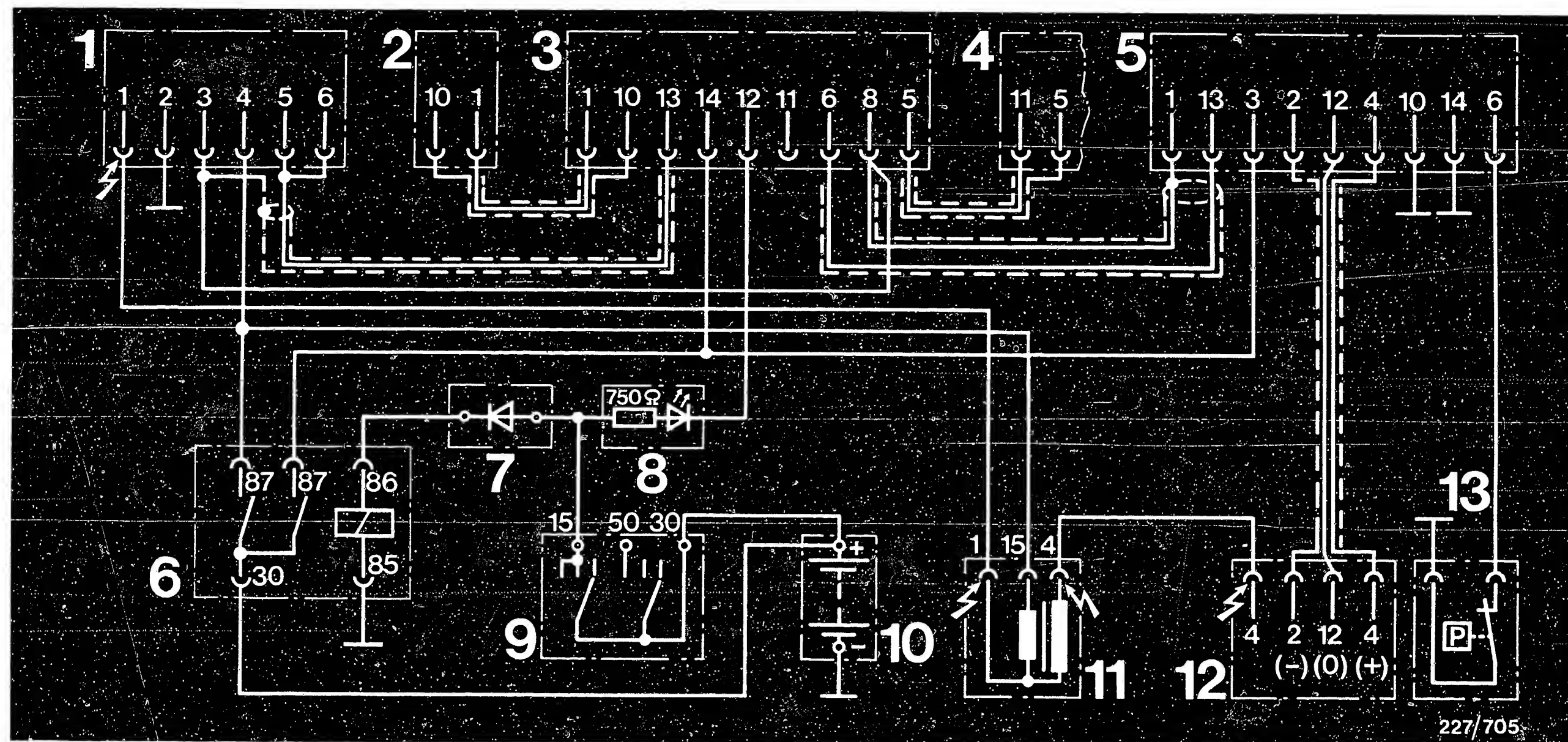
**E1**

Ignition pulse generator power supply with ignition on	$\geq 10$ V
--	-------------

**F7**

See Autodata test specifications for settings for  
idle speed, exhaust gas, valve clearing etc.





227/705

Danger arrows:  
Warning: 400 V ... 25 kV

- 1 = Trigger box
- 2 = Knock sensor
- 3 = Knock control unit
- 4 = L-Jetronic control unit
- 5 = Timing-advance unit
- 6 = Ignition relay
- 7 = Incorrect-polarity protection diode

- 8 = Indicator lamp
- 9 = Ignition/starting switch
- 10 = Battery
- 11 = Ignition coil
- 12 = Ignition distributor
- 13 = Pressure switch

### 3. Electrical terminal diagram

**A4**

Electrical terminal diagram  
Peugeot



**A5**

Electrical terminal diagram  
Peugeot





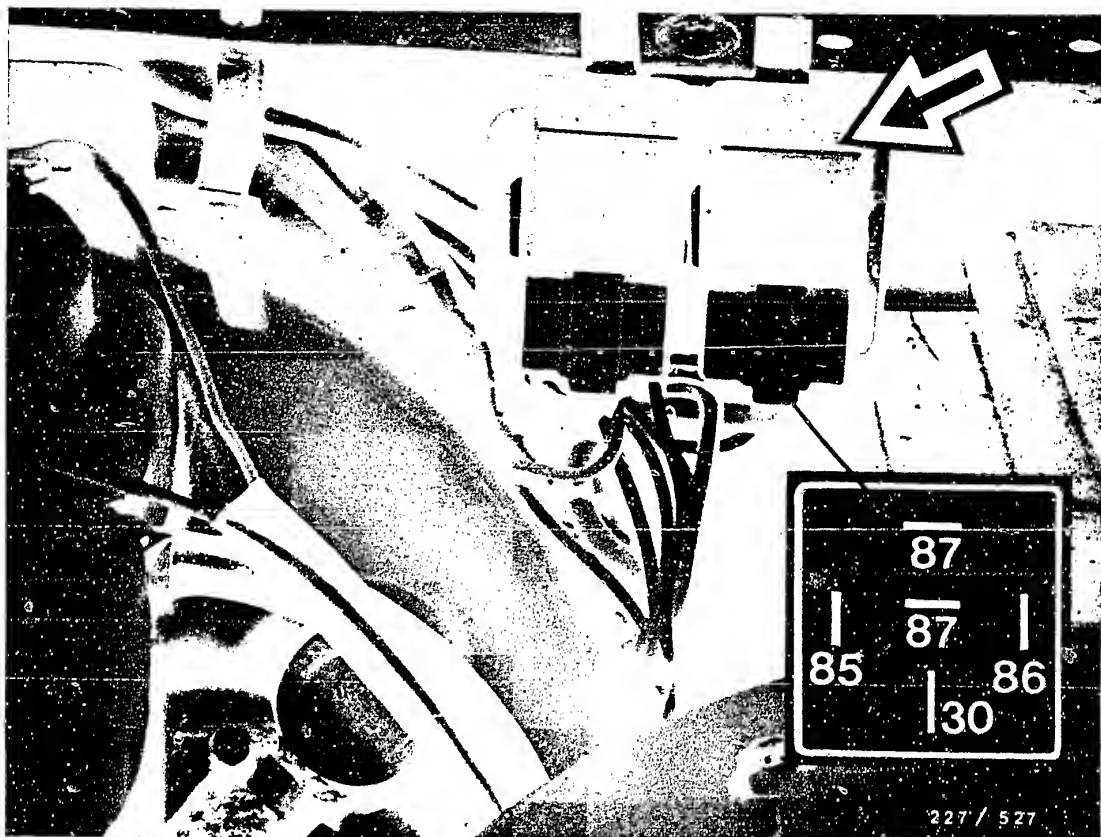
1 = TI trigger box  
2 = Heat sink

3 = Ignition coil

#### 4. Installation position of components

The trigger box and the ignition coil are mounted on a common heat sink and are housed in the engine compartment.





Arrow = Ignition relay

**A7**

Installation position of components  
Peugeot



The knock control unit is situated in the passenger compartment on the right-side near the transmission tunnel.

#### How to remove

Open the glove compartment.

Remove cover plate in glove compartment (see top picture, Item 1).

Guide the plastic stops along the slots and unhook (see top picture, item 2).

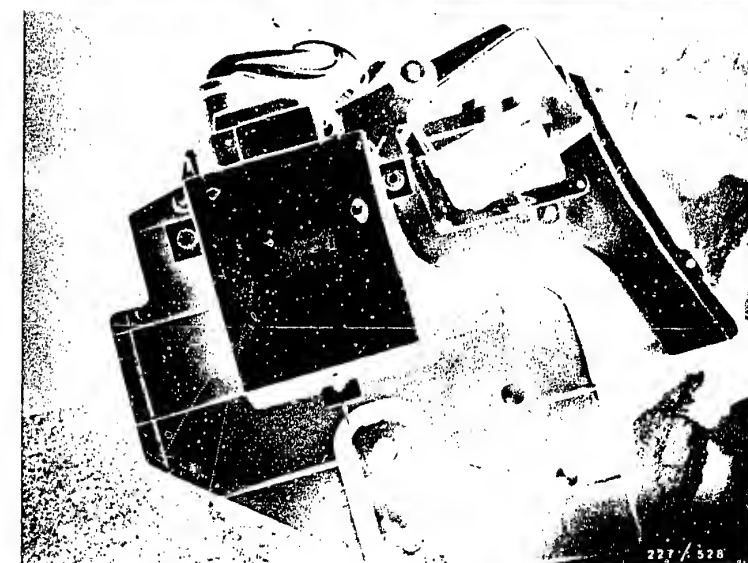
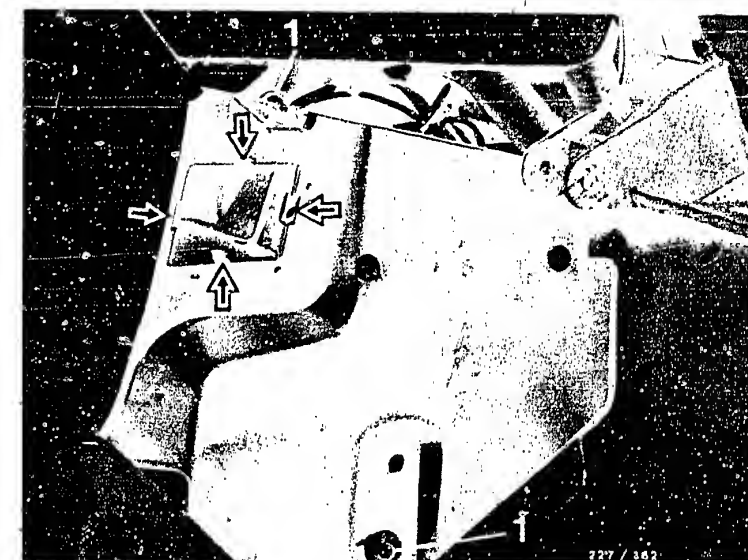
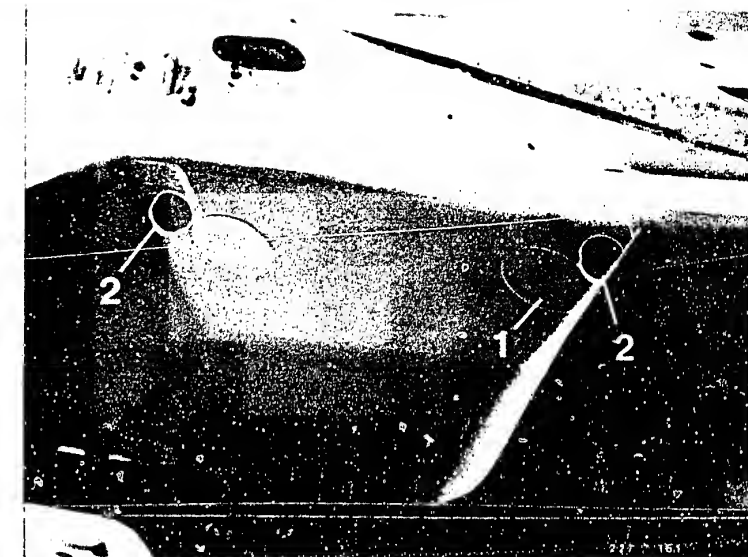
Remove both glove compartment bearing pins. Remove glove compartment.

Remove air outlet grille on side panelling. In center picture, arrows, already removed.

Partially bend back the carpet.

Unscrew 2 fastening screws from side panelling (see center picture, item 1).

The knock control unit is screwed onto the back of the side panelling (see bottom picture).



**A8**

Installation position of components  
Peugeot



**A9**

Installation position of components  
Peugeot





The timing-advance unit is in the passenger compartment on the left above the transmission tunnel. See bottom picture.

How to remove:

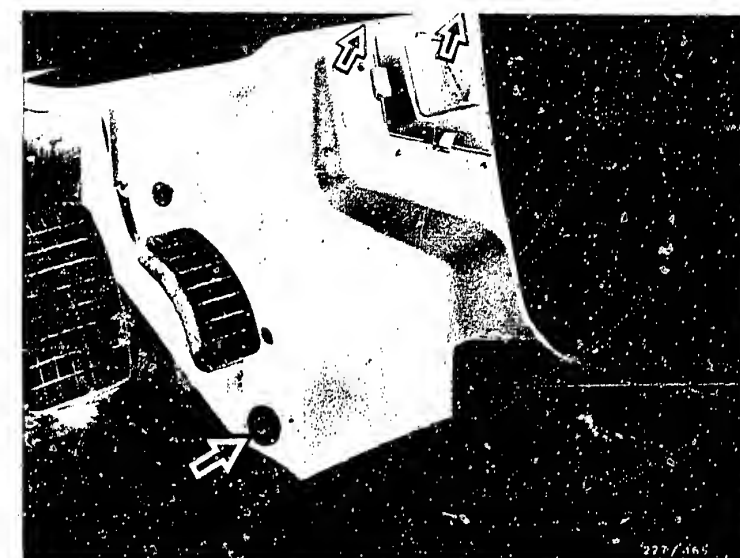
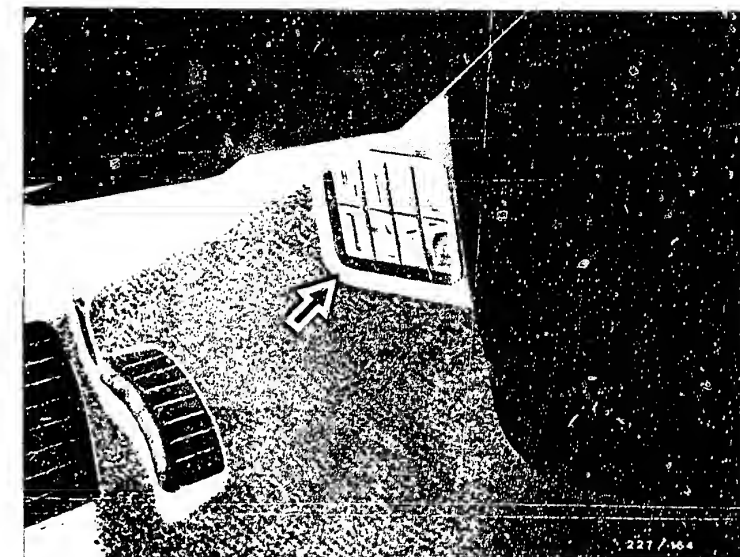
Remove air outlet cover from side panel. See arrow in top picture.

Partially fold back floor mat.

Unscrew pedal cover (not shown).

Unscrew 3 fastening screws from side panel. See center picture, arrows.

To remove the timing-advance unit plug, push detent in direction of arrow, and pivot plug in direction of arrow.



**A10**

Installation position of components  
Peugeot



**A11**

Installation position of components  
Peugeot





The indicator lamp including protective resistor are in the instrument panel  
(See arrow, top picture).

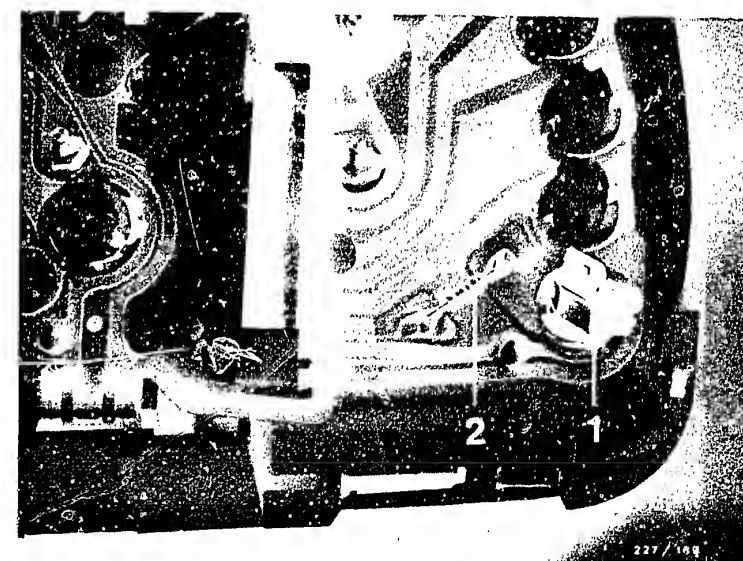
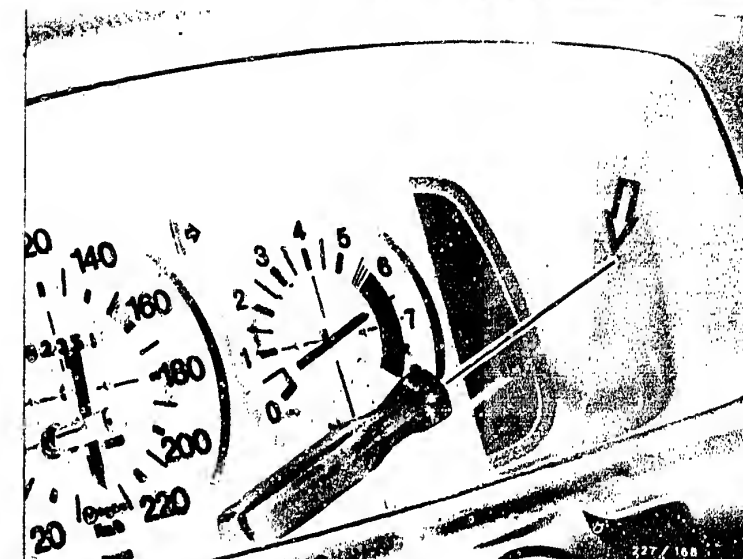
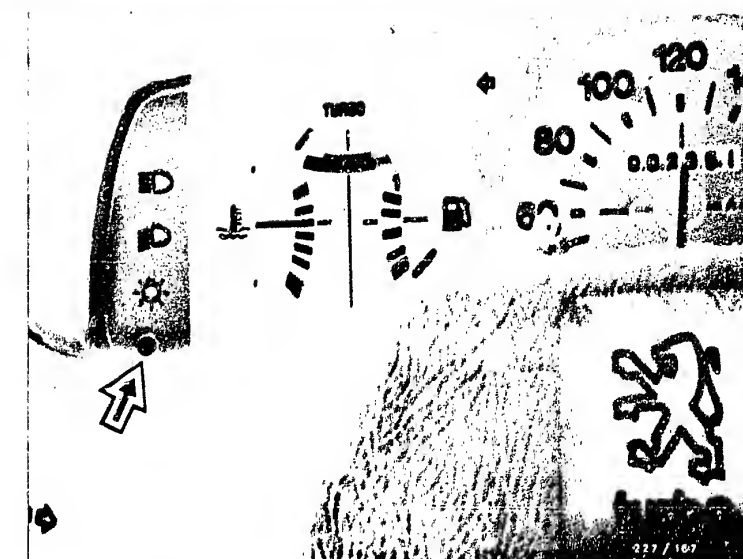
#### How to remove

Remove the steering wheel (wheels straight ahead).

Introduce a thin screwdriver into the two instrument panel holes one after the other  
(see centre picture, arrow).

The instrument panel is released by pressing lightly with the screwdriver.

Remove the instrument panel from its installation recess (speedometer shaft has latch-type connection).



Instrument panel removed, view from rear.

1 = Indicator lamp

2 = 750  $\Omega$  resistor

**A12**

Installation position of components

Peugeot

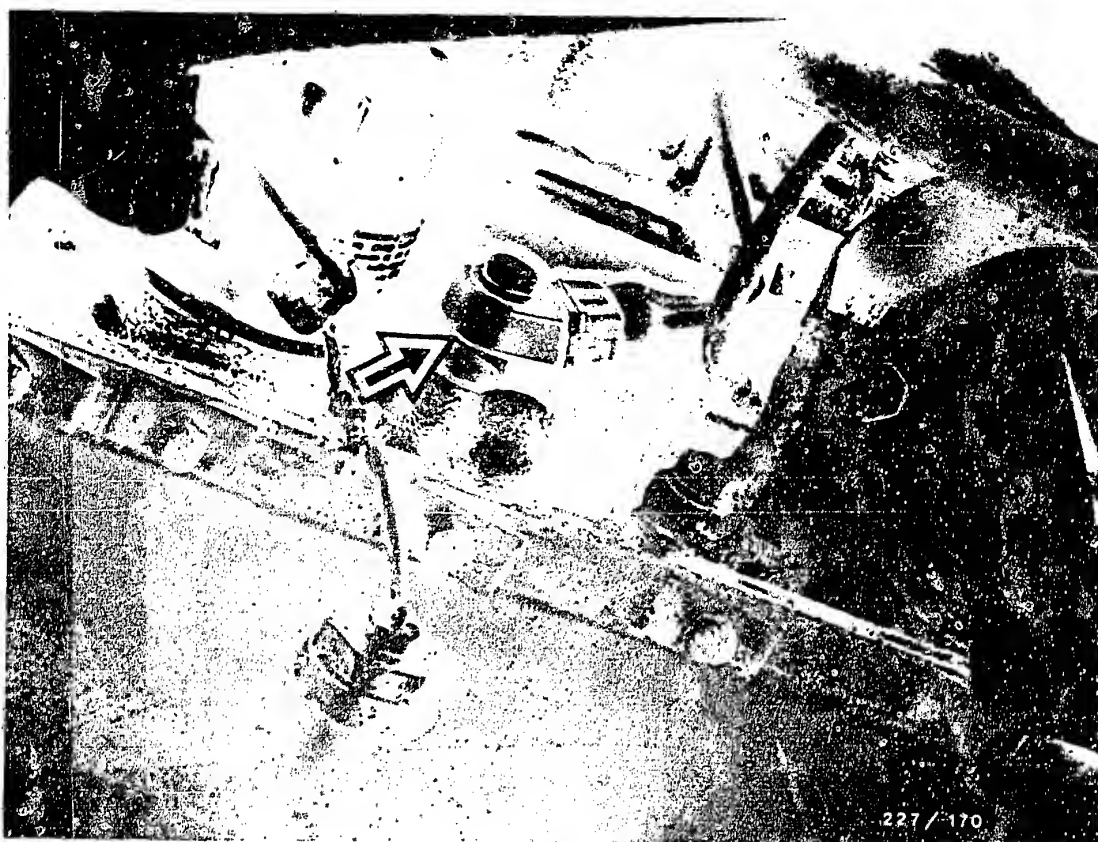


**A13**

Installation position of components

Peugeot





1 = Knock sensor

The knock sensor is on the engine block (near oil filter) on the left-hand side in the forward direction of travel.

#### Notes:

Note the installation position of the knock sensor (connection horizontal). See picture.

Install knock sensor fastening screw without plain washer, spring lock washer, tooth lock washer etc.

Tightening torque 11.... 15 Nm

Secure fastening screw only with locking paint.



The L-Jetronic control unit is housed above the glove compartment.

How to remove:

Open the glove compartment.

Remove the caps in the glove compartment (see top picture, item 1).

Guide the plastic stops along the slots and unhook (see top picture, item 2).

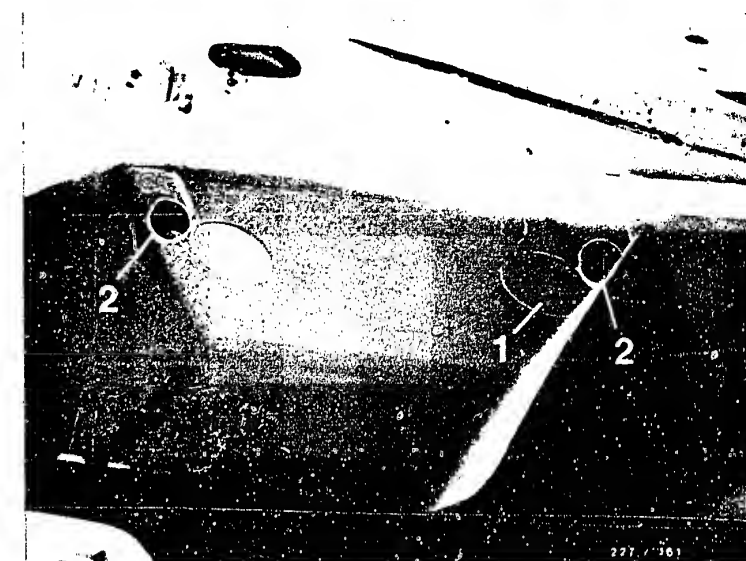
Remove both glove compartment bearing pins. Remove the glove compartment.

Unhook glove compartment lighting.

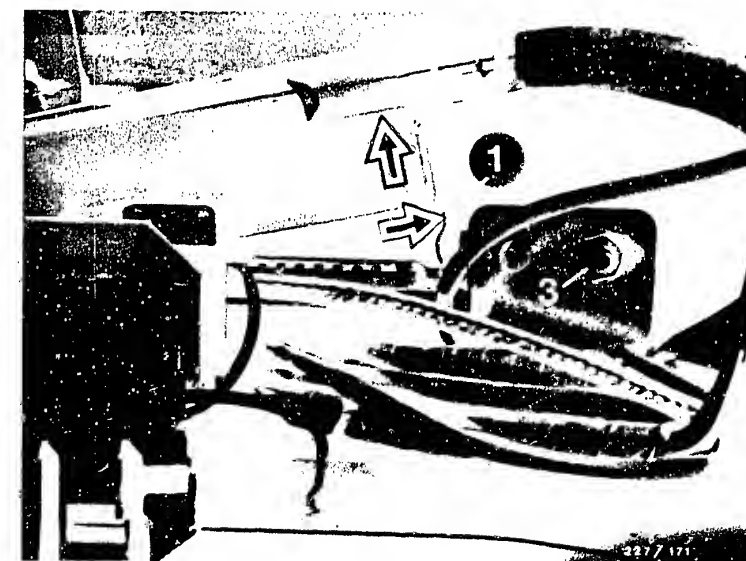
Remove air hose for internal ventilation.

Press the detent (1) of the L-Jetronic plug in the direction of the arrow so that the plug unlatches. Hinge up the plug (2) in the direction of the arrow. (See bottom picture).

Unscrew the fastening screws (3) of the control unit.

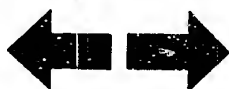


- 1 = Detent of L-Jetronic plug
- 2 = L-Jetronic plug
- 3 = Fastening of L-Jetronic control unit



**A15**

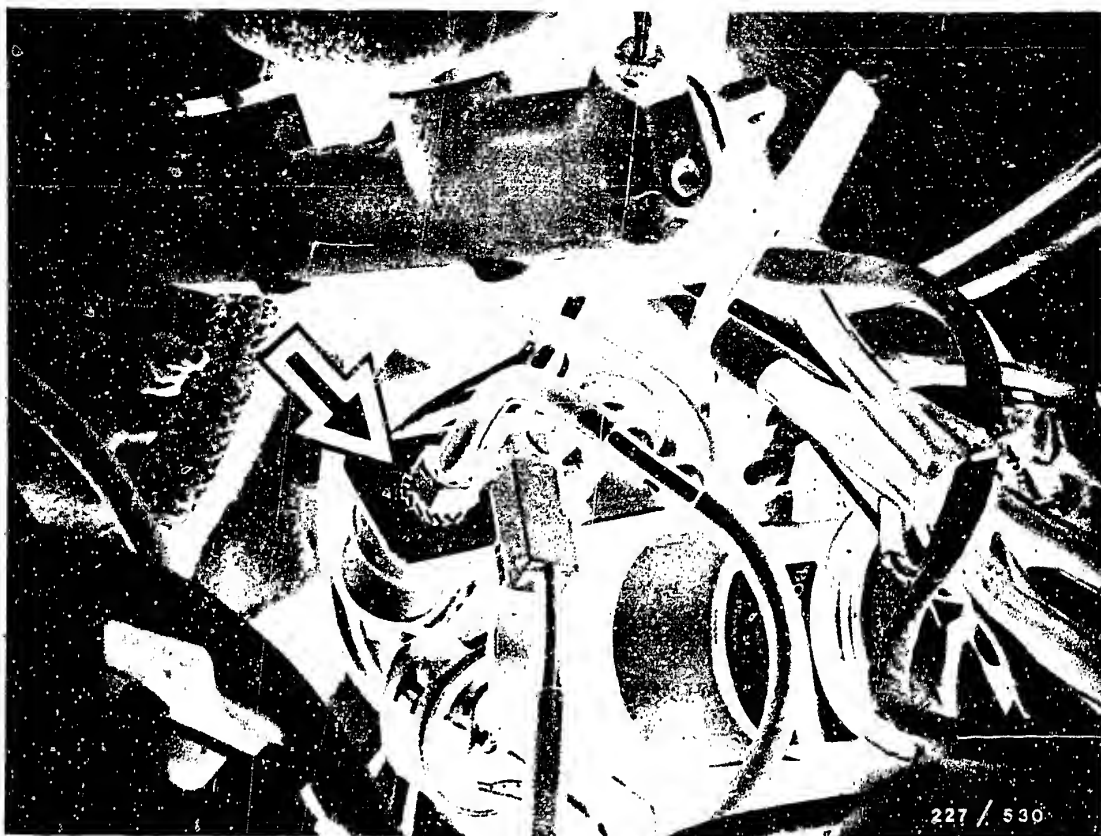
Installation position of components  
Peugeot



**A16**

Installation position of components  
Peugeot





Arrow = Pressure switch

**A17**

Installation position of components  
Peugeot



## 5. Necessary test equipment and aids

Motortester e.g.	MOT 201	0 684 000 201
Pulse shaper (required for measuring primary voltage with MOT 200, 201, 202 and 400).		1 684 463 154
Spark gap e.g.		
Ignition coil and condenser tester or single spark gap	EFAW 106 A	0 691 100 001
5 k $\Omega$ sleeve-type suppressor	EF 1177/7	1 684 531 000
		0 356 500 001
Dwell-angle tester	KTE 001.03	0 684 400 103
	MOT 100	0 684 000 100
	MOT 101	0 684 000 101
	MOT 102	0 684 000 102
	MOT 104	0 684 000 104
	MOT 200	0 684 000 200
	MOT 201	0 684 000 201
	MOT 300	0 684 000 300
Ohmmeter or e.g.	ETE 014.00	0 684 101 400
	Pontavi Wh2	Commercially available
Voltmeter e.g.	MOT 201	0 684 000 201
Thermal conduction paste		5 942 860 003
Screw locking paint	30 g	5 703 245 003
Torque wrench 5 ... 60 Nm		Commercially available
Test prods (for correct connection of testers at connectors)		Commercially available
Test leads (for correct connection of testers at connectors)	KDZS 0004, ... 0005	



Pressure/Vacuum pump Mityvac-Duo  
e.g. from  
Fa. Korinth  
Ludwig-Kloos-Str. 21  
6450 Hanau 7 - Steinheim

commercially  
available

or

- \* Pressure regulator for compressed  
air with pressure gauge 0 ... 4 bar

commercially  
available

- \* Pressure gauge 0 ... 1.6 bar  
quality class 1.0. Scale divisions  
0.05 (e.g. Wika type 211.160.1.6 -  
Part No. 4184)

commercially  
available

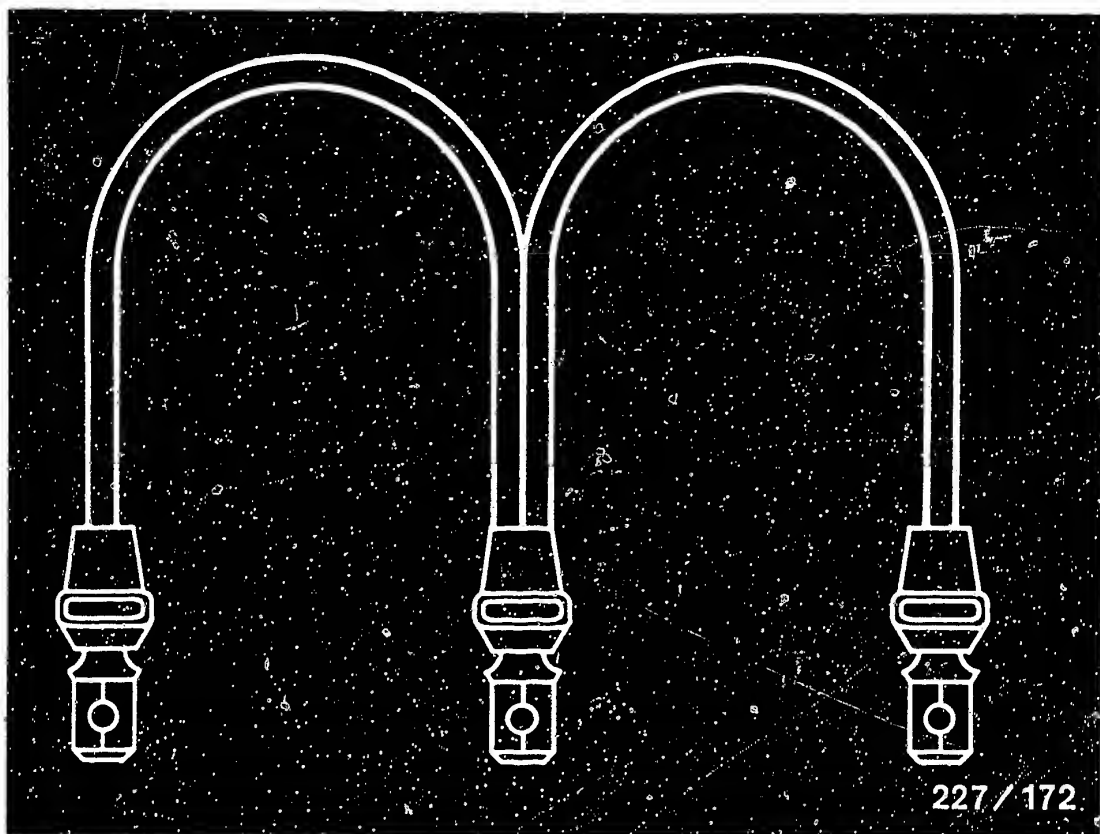
- \* Adjustment throttle

1 688 130 132

\* Note:

The above-listed equipment is often already available  
in the diesel workshop where it is used for testing  
the manifold-pressure compensators on diesel fuel-  
injection pumps.





1 = Auxiliary lead to be user-fabricated

The auxiliary lead is required for bridging the power-supply relay (ignition).

Necessary parts: approx. 150 mm cable 2.5 mm<sup>2</sup>  
3 blade terminals 8 784 480 011

**A20**

Necessary test equipment and aids  
Peugeot





## 6. Danger of accident on electronic ignition systems

Increased demands of modern engines on the ignition system combined with the desire for freedom of maintenance have recently led to electronic ignition systems being fitted as standard. Usually the ignition power of electronic systems (of almost all manufacturers) is higher than that of conventional systems, and there are signs of further increases in power. Electronic ignition systems thus reach a power range which can be highly dangerous if live parts or terminals are touched (both on the primary as well as the secondary sides).

In this connection we should like to point out that the VDE regulations, in particular VDE 0104/7.67 and/or the respective national regulations must be followed when testing or working on the ignition system.

The ignition should always be switched off when working on the ignition system (switch off ignition or voltage source). Such work includes:

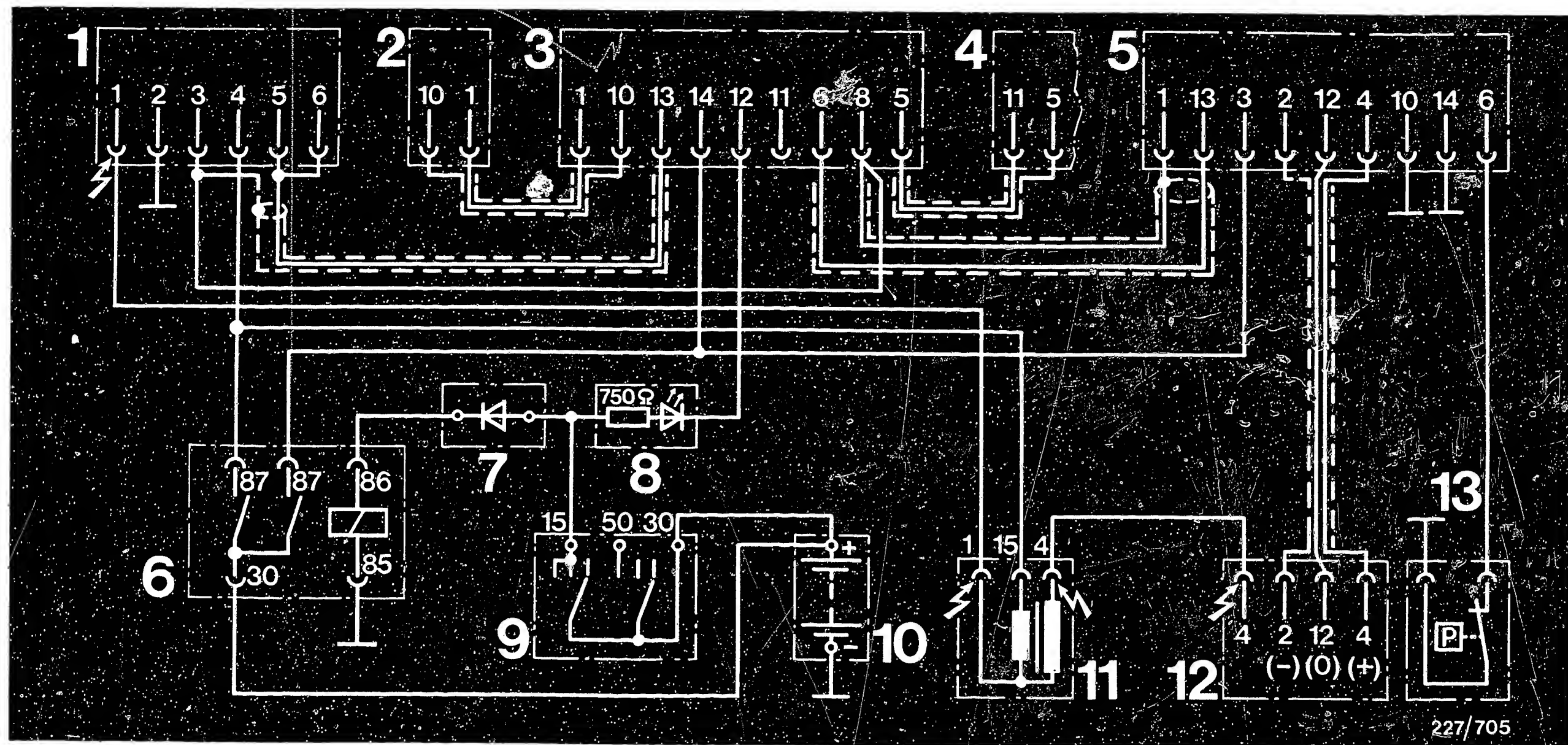
- Connecting of engine test equipment (timing light, dwell-tach tester, ignition oscilloscope etc.).
- Replacing parts of the ignition system (spark plug, ignition coil, ignition distributor, H.T. ignition cable etc.).



If, while testing the ignition system or during adjustment work on the engine (e.g. L-Jetronic) it becomes necessary to switch on the ignition (switch on the ignition or voltage source), the above-mentioned dangerous voltages occur over the entire system.

The danger of accident exists, therefore, not only on the individual assemblies of the ignition system (e.g. ignition distributor, ignition coil, trigger box, ignition harness), but also on the wiring harness (e.g. tachometer connection, diagnostic plug), at plug-in connections and test equipment.





Danger arrows:  
Warning: 400 V ... 25 kV

- |   |                              |
|---|------------------------------|
| 1 = Trigger box                         | 8 = Indicator lamp           |
| 2 = Knock sensor                        | 9 = Ignition/starting switch |
| 3 = Knock control unit                  | 10 = Battery                 |
| 4 = L-Jetronic control unit             | 11 = Ignition coil           |
| 5 = Timing-advance unit                 | 12 = Ignition distributor    |
| 6 = Ignition relay                      | 13 = Pressure switch         |
| 7 = Incorrect-polarity protection diode |                              |

### Electrical terminal diagram

The dangerous locations are marked with danger arrows taking the example of the terminal diagram of an electronic ignition system.

**A23**

Danger of accident  
Peugeot



**A24**

Danger of accident  
Peugeot



7. Incorrect indication of engine speed, dwell angle and ignition point

In ignition systems with trigger box 0 227 100 123 (TZ-I) with current limitation there may be an incorrect indication of engine speed, dwell angle and ignition point on testers.

For further information see Coordinates N 8 - N12.

**B1**

Incorrect indication on testers

Peugeot



## 8. Important vehicle information

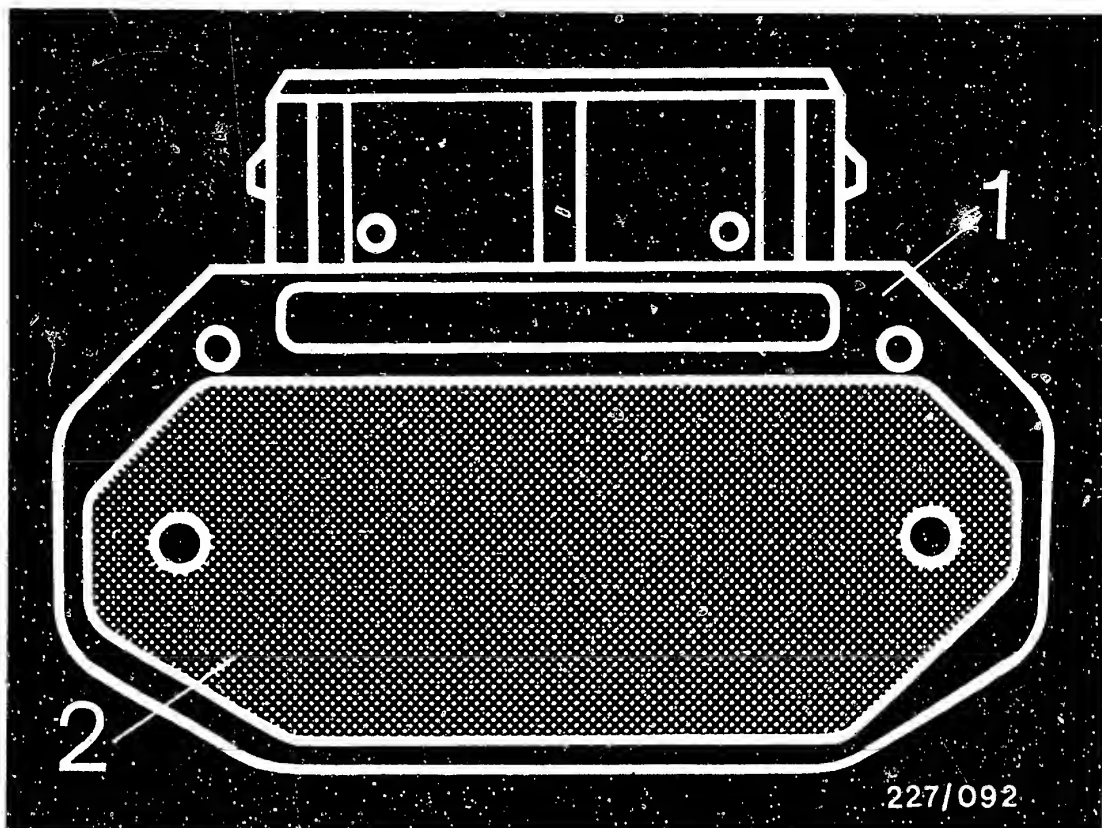
- Resistance measurements must only be performed with the ignition switched off or with the battery disconnected (measuring instrument defective).
- During the compression test, either pull off the trigger-box plug or firmly connect terminal 4 of the ignition coil to ground using an extra cable (dangerous voltages, insulation damage at ignition coil, ignition distributor, ignition harness).

### Note:

The extra cable must be suppressed with at least 2 k $\Omega$ , e.g. with sleeve-type suppressor (5 k $\Omega$ ) 0 356 500 001.

- The specified ignition coil (see Part No.) must not be replaced with a different ignition coil.
- No suppression capacitor may be connected to ignition coil term. 1.
- Ignition coil terminal 1 must not be brought into contact with ground as a theft-proofing measure (ignition coil will be destroyed when ignition is switched on).
- No battery + a. or test lamp may be connected to ignition coil terminal 1 (trigger box will be destroyed).
- Ignition cable from ignition coil terminal 4 to ignition distributor terminal 4 must not be disconnected during operation.
- There must be no wiring from ignition coil terminal 4 to ignition coil terminal 1 and 15.  
Ignition pull sensor or trigger box may be destroyed.





1 = Trigger box

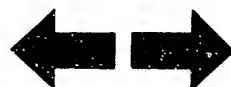
2 = Base plate

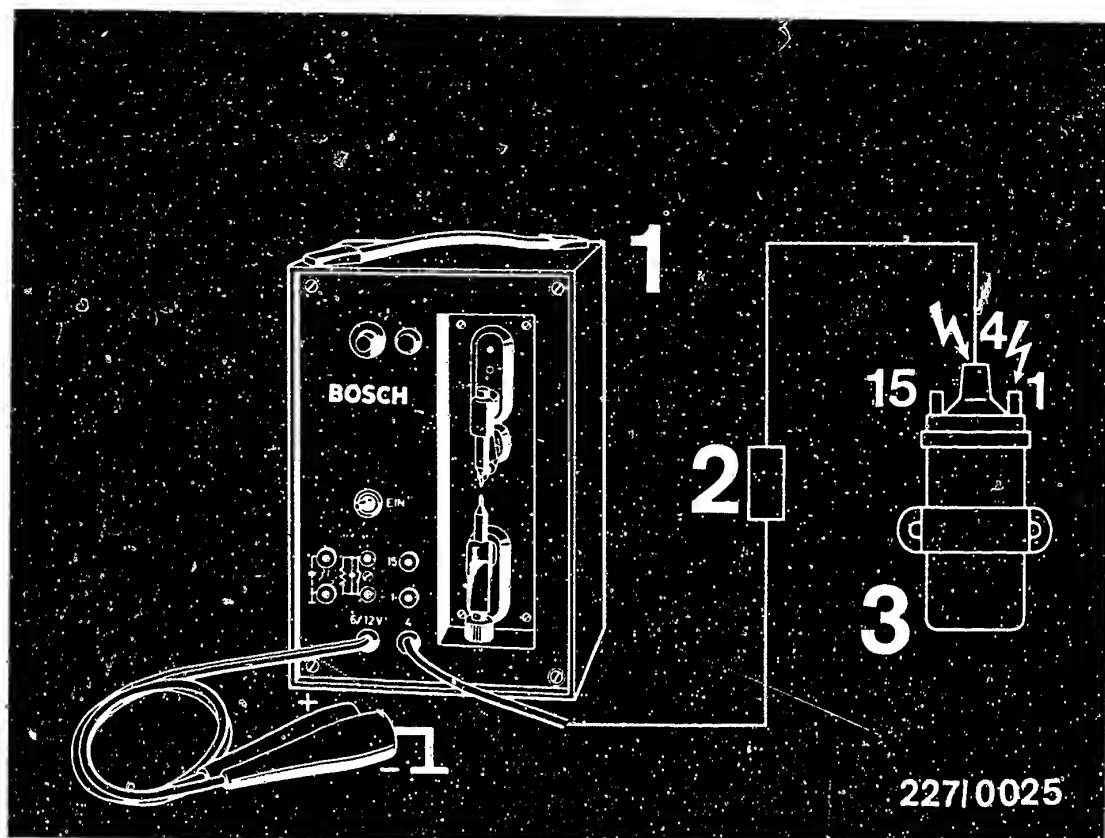
- Before mounting the trigger box, the base plate must be coated with thermal conduction paste. Apply thermal conduction paste only with a suitable object (screwdriver, matchstick etc.). Do not apply thermal conduction paste to painted parts.

**B3**

Important vehicle information

Peugeot





- 1 = Spark gap
- 2 = 5 kΩ sleeve-type suppressor
- 3 = Ignition coil

Danger arrows: Warning 400 V... 25 kV

- In order to prevent the trigger box from being irreparably damaged, when using a spark gap, an interference-suppression resistor of at least 2 kΩ must be connected between the spark gap and ignition coil terminal 4, e.g. sleeve-type suppressor (5 kΩ) 0 356 500 001.



- In order to prevent the trigger box from being irreparably damaged, the secondary side of the ignition system must have at least 2 k $\Omega$  interference suppression whereby the original distributor rotor with 1 k $\Omega$  interference-suppression resistor must be fitted (even in the case of radio and spark interference suppression do not use a 5 k $\Omega$  distributor rotor).
- No external voltage, e.g. ohmmeter, may be connected to ignition pulse generator (Hall generator).  
Caution when changing measuring ranges.
- Leads between ignition pulse generator and timing-advance unit and between timing-advance unit and trigger box must be shielded (malfunction of timing-advance unit and trigger box).
- The holding springs of the distributor cap must not drop into the pickup system when the engine is being cranked and with the dust-protection cover removed.
- Arcing or breakdown of insulation at the distributor cap may lead to the destruction of ignition pulse generator and trigger box.
- Do not disconnect the battery with the engine running.
- Do not use a starting aid with more than 16 V or a fast charger for starting.



- The knock sensor lead must be screened and laid separately from high-tension cables.
- Install the knock sensor fastening screw without plain washer, spring lock washer, tooth lock washer etc. Secure the fastening screw only with locking paint.



## 9. Trouble-shooting

### 9.1 Procedure for trouble-shooting chart

The trouble-shooting chart starting on Coordinate C3 is divided into the following sections:

"Trouble-shooting for ignition" and "Trouble-shooting for knock control".

The chart contains symptoms of the trouble, cause of the trouble, test instructions and coordinate references. Select the possible cause of the trouble in the trouble-shooting chart in accordance with the customer complaint (symptom of trouble).

If the cause of the trouble is unclear, start testing with the detailed, self-contained trouble-shooting program starting on Coordinate C13.

If the cause of the trouble has been clearly diagnosed in accordance with the trouble-shooting chart, then direct trouble-shooting is possible by going to the coordinate given on the right without having to go through the entire trouble-shooting program for each fault. If there is no coordinate given on the right, carry out trouble-shooting in accordance with the "test instructions" column.

### 9.2 Procedure for trouble-shooting program

The trouble-shooting program starting on Coordinate C 13 is divided into 3 rows of boxes.

The left-hand row contains test instructions and test specifications.

The center row contains repair instructions.


The right-hand row contains the illustrations/terminal diagrams belonging to the text and the explanation of the items in the picture.


If the questions asked in the left-hand row can be answered conclusively with "yes", then proceed to the next test down.

If the answer to the question is "no", branch to the center row and carry out the tests given there.

### 9.3 Test conditions

Battery fully charged, fuel system O.K., engine mechanically O.K. (e.g. compression, valve clearance etc). Ambient temperature/ignition system temperature 0° to 100 °C (temperature has a considerable effect on measured values).

<b>C1</b>	Trouble-shooting Peugeot	
-----------	-----------------------------	---

<b>C2</b>	Trouble-shooting Peugeot	
-----------	-----------------------------	---

# 9.4 Trouble-shooting chart for ignition (with ignition coil, ignition distributor, trigger box and ignition timing unit)

(Customer complaint (symptom of trouble))

1. Starting motor operates, but engine fails to start											
2. Rough idling											
3. Poor throttle response											
4. Engine lacks power											
5. Misfiring											
6. Fuel consumption too high											
7. Engine pings when accelerating											
8. Backfiring.											
9. Engine overheats											
									<u>Cause of trouble</u>	<u>Test instructions</u>	<u>Coordinate</u>
●	●	●	●	●	●	●	●	●	Unclear	Carry out detailed trouble-shooting	C 13
●	●	●	●	●	●		●		Spark plugs defective	Assess using ignition oscillogram or remove spark plug and make visual examination.	----
●	●	●	●	●	●	●	●	●	Basic ignition setting incorrect	To prevent incorrect adjustment, be sure to test in accordance with instructions.	C 21 - D 19
●	●	●	●	●					Shunt on secondary side	Assess ignition coil, ignition distributor, ignition harness and spark plug using ignition oscillogram or make visual examination	----
●	●	●	●	●					Open circuit on secondary side	Assess ignition coil, ignition distributor, ignition harness and spark plug using ignition oscillogram, or test for continuity using ohmmeter.	----
●									Open circuit on primary side	-	F 19
●	●	●	●	●					Ignition coil defective	-	C 15

C3

Trouble-shooting chart

Peugeot



C4

Trouble-shooting chart

Peugeot



# Trouble-shooting chart for ignition (with ignition coil, ignition distributor, trigger box and ignition timing unit)

## Customer complaint (symptom of trouble)

1. Starting motor operates, but engine fails to start

2. Rough idling

3. Poor throttle response

4. Engine lacks power

5. Misfiring

6. Fuel consumption too high

7. Engine pings when accelerating

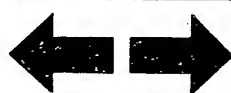
8. Backfiring

9. Engine overheats

									Cause of trouble	Test instruction	Coordinate
		●	●	●	●				Interference-suppression resistors defective	Assess using ignition oscillogram or perform resistance measurement	----
		●			●				Part-load ignition advance incorrect	----	D 16
		●	●		●	●		●	Pressure switch defective	----	D 20
				●					Timing-advance unit pulse incorrect	----	D 22
●									Ignition distributor pulse generator defective	----	F 11
●									Trigger box defective	----	F 9
●									Trigger box control line defective	----	F 17
●									Firing sequence incorrect	1 - 3 - 4 - 2	----
●									Knock control defective	Trouble-shooting for knock control	C 7 - C 12

**C5**

Trouble-shooting chart  
Peugeot



**C6**

Trouble-shooting chart  
Peugeot



# Trouble-shooting chart for knock control (with indicator lamp, knock sensor, knock control unit and L-Jetronic control unit)

## Customer complaint (symptom of trouble)

1. Starting motor operates but engine fails to start
2. Indicator lamp continuously lit, even after journey with ignition on
3. Indicator lamp not lit before starting with ignition on
4. Indicator lamp flashes only under load
5. Indicator lamp flashes after driving under load even when idling
6. Indicator lamp flickers occasionally only under load
7. Indicator lamp flickers occasionally under load and at idle
8. Engine idle speed unstable
9. Engine knocking, ignition not being retarded

									Cause of trouble	Test instructions	Coordinates
●	●	●	●	●	●	●	●	●	unclear	perform detailed trouble-shooting	C 13
●									Ignition system defective	Trouble-shooting chart f. ignition	C 3- C 6
●		●							Knock control unit defective No power supply to knock control unit	-----	F 13
	●								Knock control unit defective, indicator lamp/connecting lead has short circuit to ground	-----	C 21- C 24
		●							Knock control unit defective, indicator lamp defective, no power supply to indicator lamp	-----	C 21- C 24
			●						Knock sensor connecting lead defective	-----	D 9
			●						Knock control unit voltage < 9 V	-----	D 10
			●						Knock sensor defective or mounting of knock sensor incorrect	-----	D 12
			●						Knock control unit defective	-----	D 14

C7

Trouble-shooting chart  
Peugeot



C8

Trouble-shooting chart  
Peugeot



# Trouble-shooting chart for knock control (with indicator lamp, knock sensor, knock control unit and L-Jetronic control unit)

## Customer complaint (symptom of trouble)

1. Starting motor operates but engine fails to start

2. Indicator lamp continuously lit, even after journey with ignition on

3. Indicator lamp not lit before starting with ignition on

4. Indicator lamp flashes only under load

5. Indicator lamp flashes after driving under load even when idling

6. Indicator lamp flickers occasionally only under load

7. Indicator lamp flickers occasionally under load and at idle

8. Engine idle speed unstable

9. Engine knocking, ignition not being retarded

									Cause of trouble	Test instructions	Coordinate
				●					ti injection signal incorrect	-	D 1 - D 7
				●					Knock control unit voltage < 9 V	-	D 10
				●					Knock sensor defective, knock sensor in- correctly installed	-	D 12
				●					Knock sensor connecting lead defective	-	D 12
				●					Knock control unit defective	-	D 14
					●				Knock sensor connecting lead has loose contact	-	D 12
					●				Knock control unit defective	-	D 14
					●				Ignition overadvanced	-	D 16 - D 21
					●				Engine overheating, engine cooling defective	Check coolant, V-belt, thermostat etc.	----
					●				Charge-air pressure control defective	Test charge-air pressure control	----
					●				Abnormal engine noises leading to detection of knocking	Engine not mechanically O.K. (bearing damage, valve spring broken etc.)	----

C9

Trouble-shooting chart

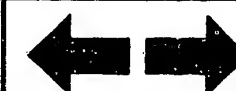
Peugeot



C10

Trouble-shooting chart

Peugeot





# Trouble-shooting chart for knock control (with indicator lamp, knock sensor, knock control unit and L-Jetronic control unit)

## Customer complaint (symptom of trouble)

1. Starting motor operates but engine fails to start

2. Indicator lamp continuously lit, even after journey with ignition on

3. Indicator lamp not lit before starting with ignition on

4. Indicator lamp flashes only under load

5. Indicator lamp flashes after driving under load even when idling

6. Indicator lamp flickers occasionally only under load

7. Indicator lamp flickers occasionally under load and at idle

8. Engine idle speed unstable

9. Engine knocking, ignition not being retarded

									Cause of trouble	Test instructions	Coordinate
						●			ti injection signal incorrect, knock control unit defective, L-Jetronic control unit defective	-	D 1 - D 7
							●		ti injection signal incorrect	-	D 1 - D 7
								●	ti injection signal incorrect, L-Jetronic control unit defective, knock control unit defective	-	D 1 - D 7

C11

Trouble-shooting chart

Peugeot



C12

Trouble-shooting chart

Peugeot



## 9.5 Trouble-shooting program

### Test primary signal.

If no oscilloscope or tachometer is available, check whether there is an ignition spark across the spark gap.

### Primary signal with oscilloscope.

Connect oscilloscope to ignition coil as per operating instructions. Start the engine. Oscilloscope must show a primary voltage (of any value).

### Primary signal with tachometer.

Connect tachometer to ignition coil as per operating instructions. Start the engine. Tachometer must indicate a value (any value).

### Ignition spark with spark gap.

Disconnect ignition cable term. 4 from ignition coil.

Connect spark gap including sleeve-type suppressor (5 k $\Omega$ ) to ignition coil.

Adjust spark gap to 5 mm.

Start the engine.

There must be sparks across the spark gap.

Primary signal present or ignition sparks across spark gap?

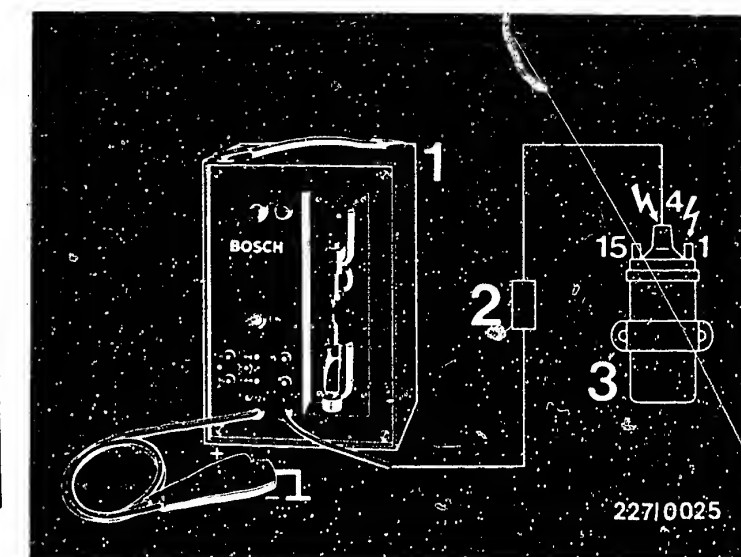
yes

Continued on C 15 / C 16

no

If no primary signal or no ignition spark, continue testing at F1.

Tests as from C 15 not necessary.



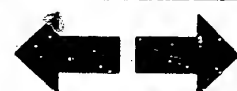
- 1 = Spark gap
- 2 = 5 k $\Omega$  sleeve-type suppressor
- 3 = Ignition coil

Danger arrows:  
Warning: 400 V ... 25 kV

**C13**

Trouble-shooting program

Peugeot

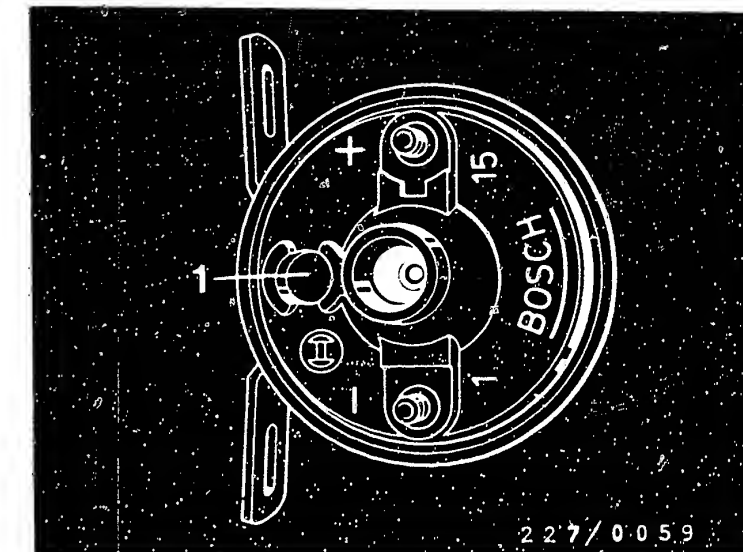
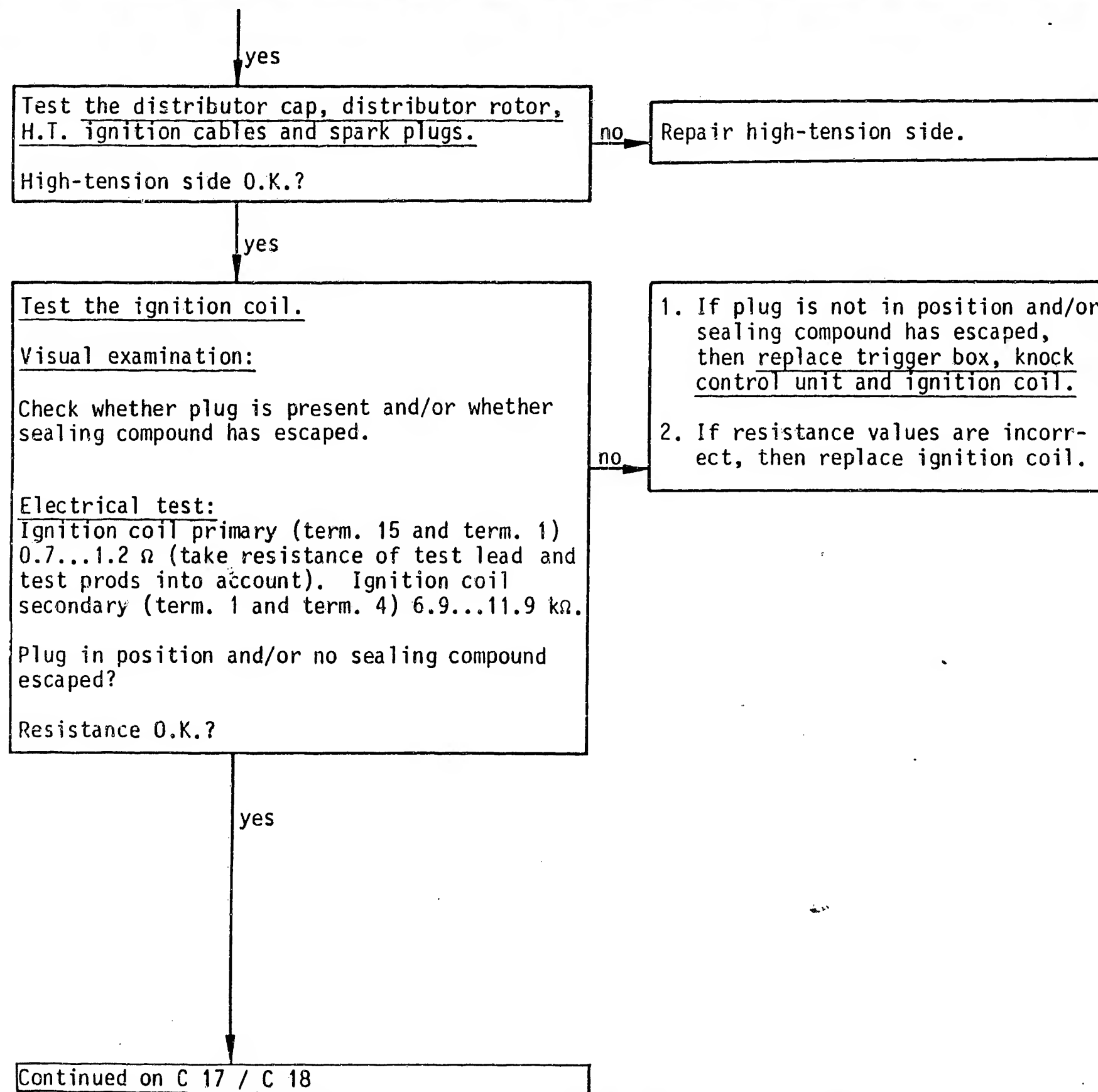


**C14**

Trouble-shooting program

Peugeot





1 = Plug

**C 15**

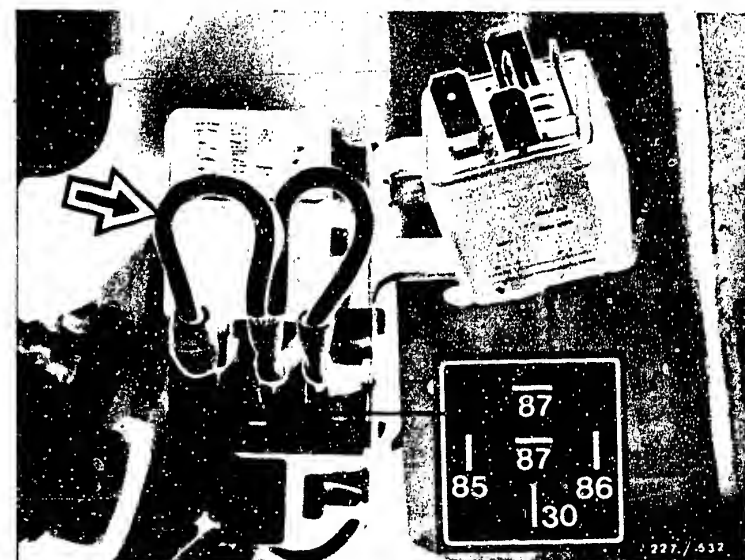
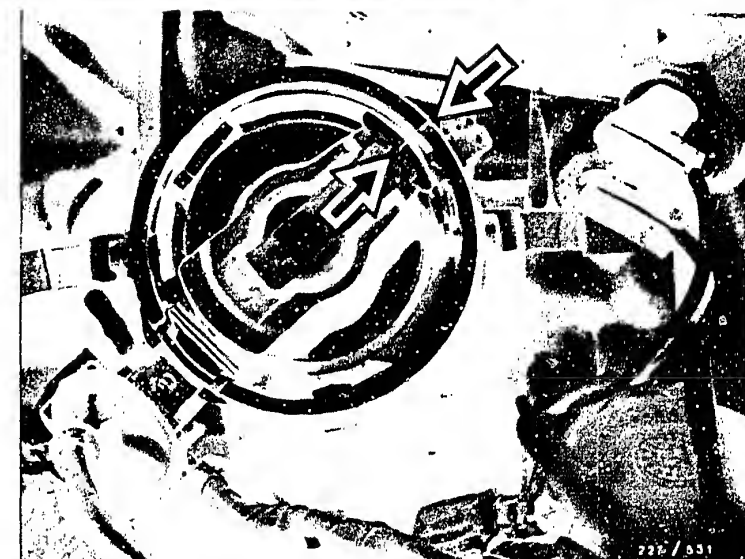
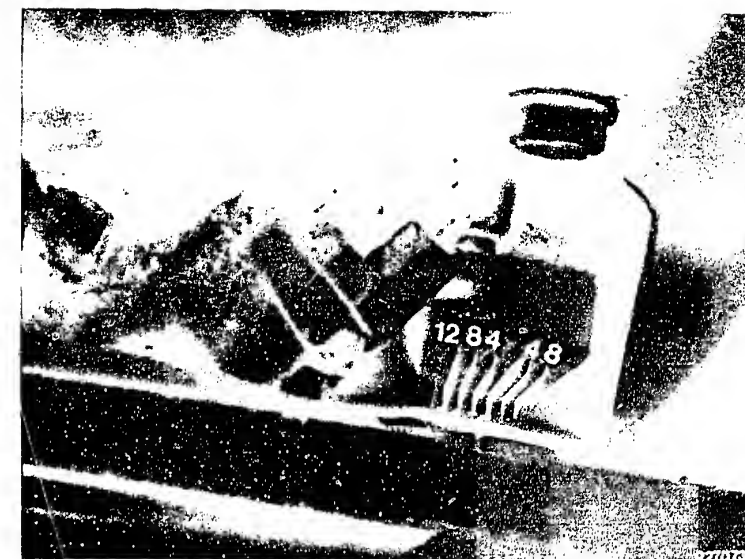
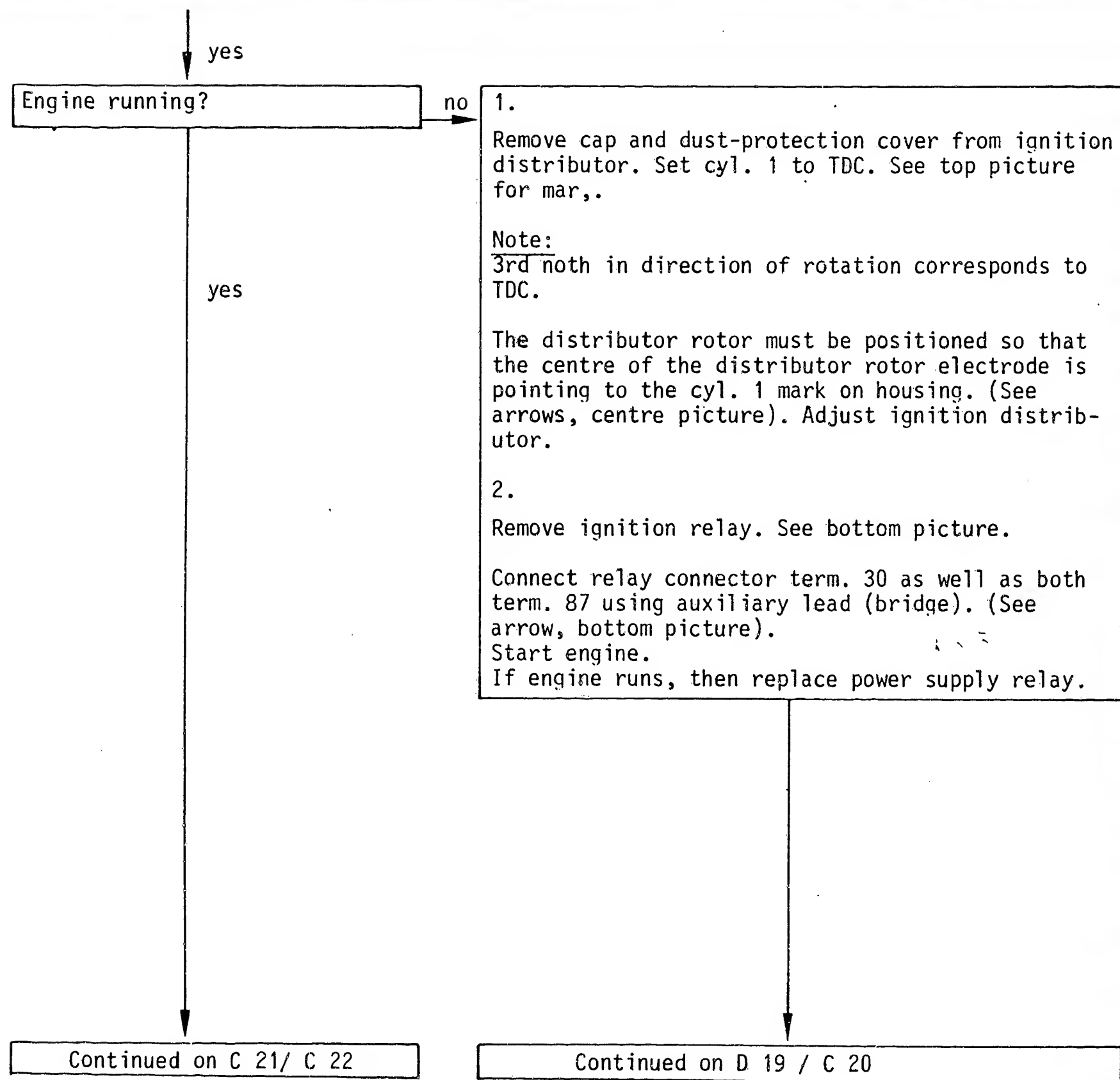
Trouble-shooting program  
Peugeot



**C 16**

Trouble-shooting program  
Peugeot





**C17**

Trouble-shooting program  
Peugeot



**C18**

Trouble-shooting program  
Peugeot



Continued

3.

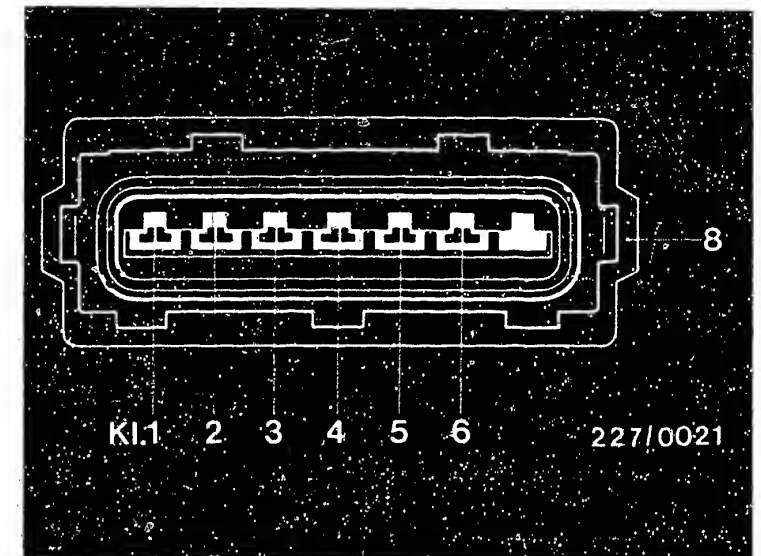
Disconnect the negative and positive cables from the battery. Disconnect the trigger-box plug. Switch on the ignition.

Check for contact resistance in cables from positive battery terminal to trigger-box plug term. 4 including cables from negative battery terminal to trigger-box plug term. 2. Total contact resistance max.  $0.3 \Omega$  (take resistance of test lead and test prods into account). Eliminate contact resistance.

Check for contact resistance in cables from positive battery terminal to ignition coil term. 15 as well as in cable from ignition coil term. 1 to trigger-box plug term. 1. Total contact resistance max.  $0.3 \Omega$  (take resistance of test lead and test prods into account). Eliminate contact resistance.

If points 1, 2 and 3 O.K., replace trigger box.

yes



8 = Trigger-box plug

Continued on C 21 / C 22

**C19**

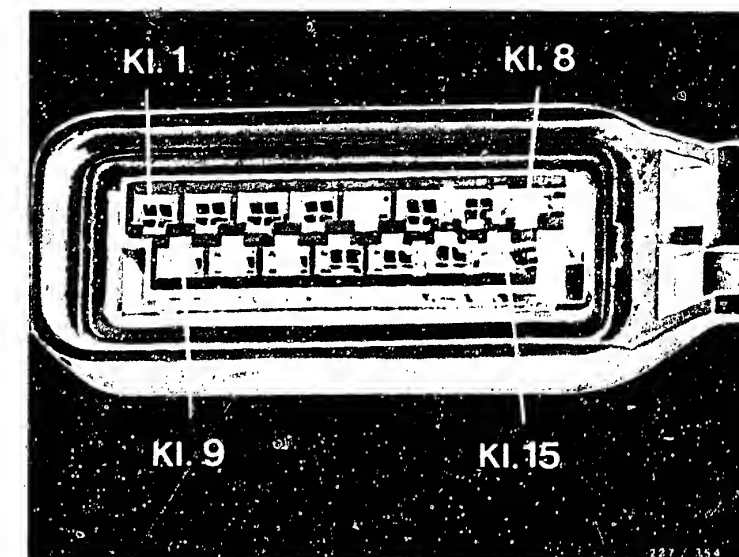
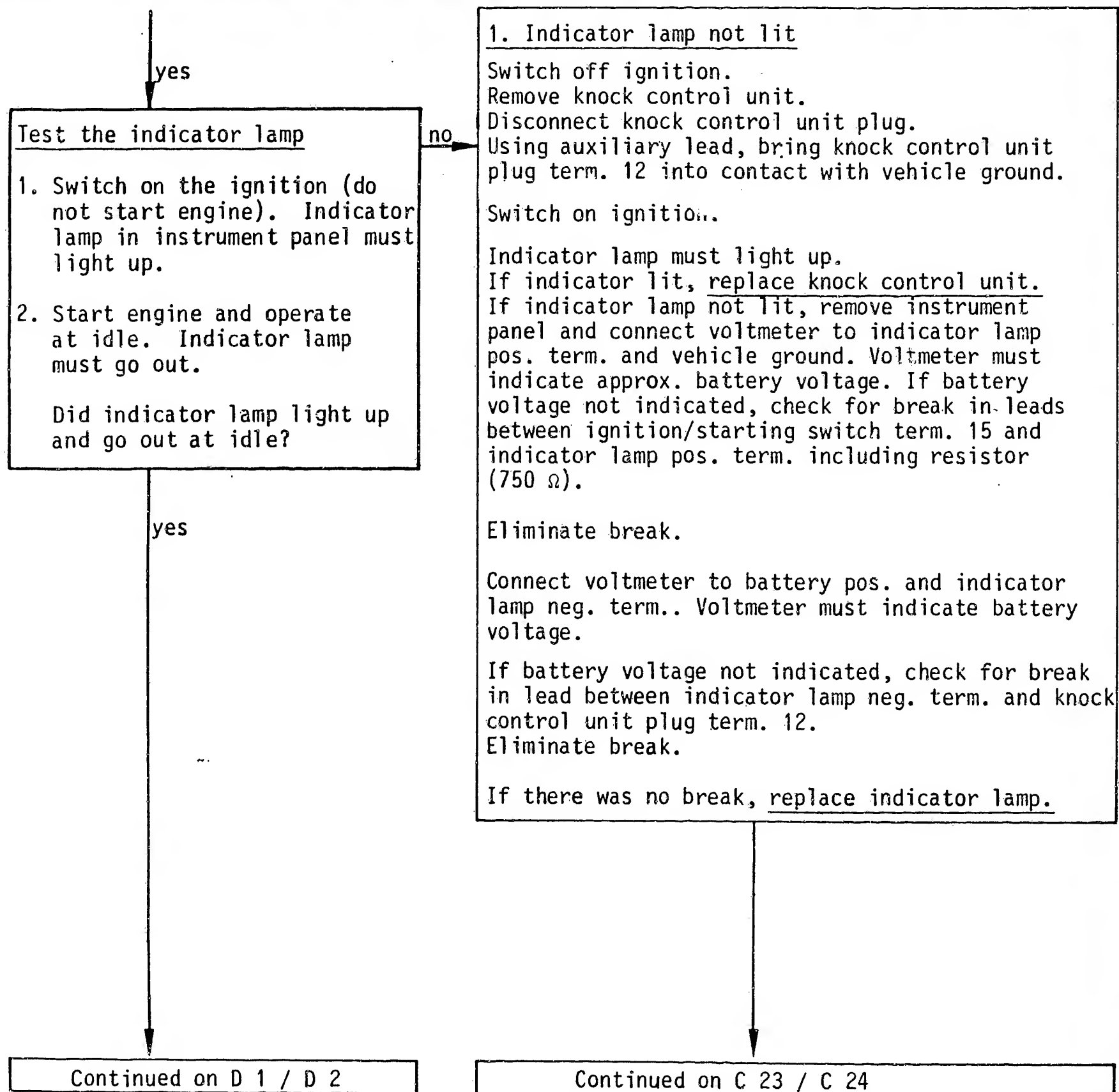
Trouble-shooting program  
Peugeot



**C20**

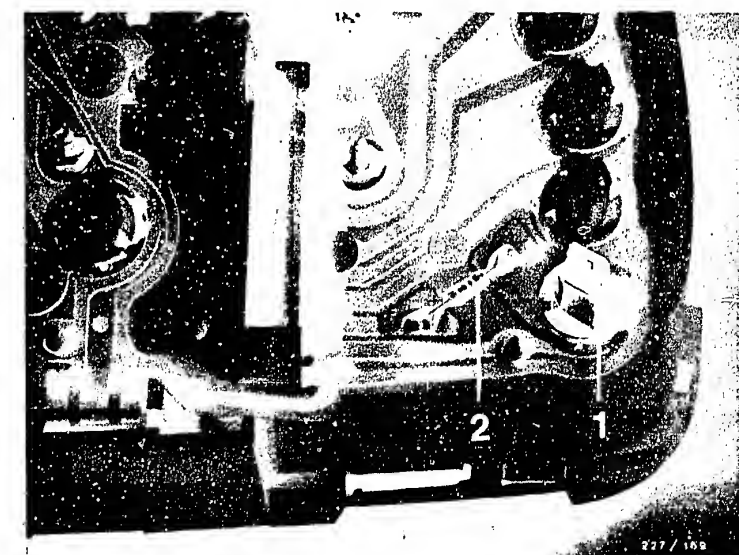
Trouble-shooting program  
Peugeot





Knock control unit plug

1 = Indicator lamp  
2 = 750  $\Omega$  resistor





Continued

2. Indicator lamp lit continuously

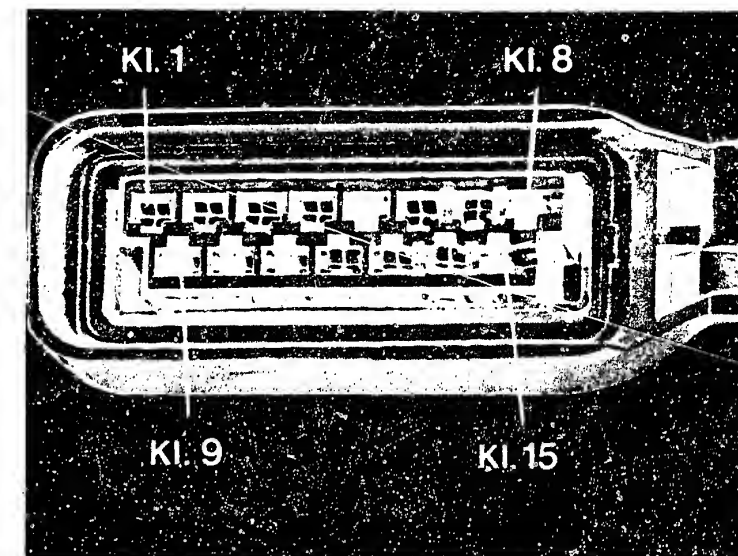
Switch off ignition.  
Remove knock control unit.  
Remove knock control unit plug.  
Switch on ignition.

If indicator lamp no longer lit, then replace  
knock control unit.

If indicator lamp still lit, short circuit  
to ground in indicator lamp or in connecting  
lead term. 12.  
Eliminate short circuit to ground.

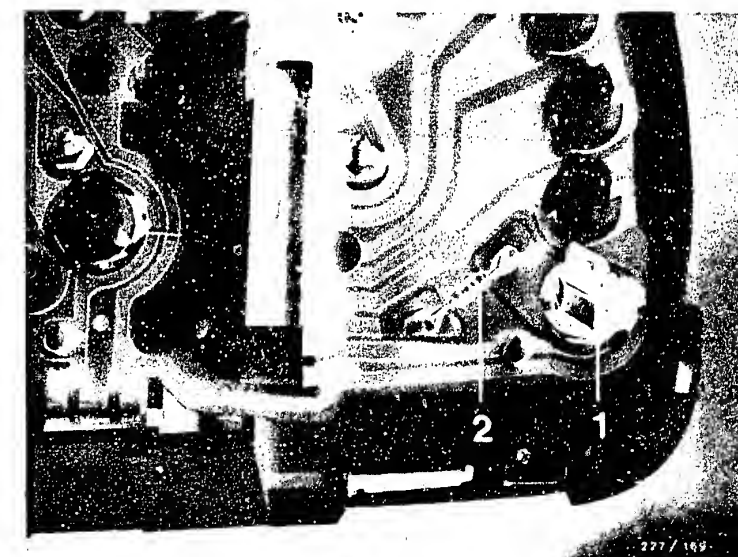
yes

Continued on D 1 / D 2



Knock control unit plug

1 = Indicator lamp  
2 = 750  $\Omega$  resistor



**C23**

Trouble-shooting program

Peugeot



**C24**

Trouble-shooting program

Peugeot





yes

Test ti injection signal without load on engine.

Engine must be at normal operating temperature.

Remove knock sensor plug.

Start engine and operate for approx. 5 sec at at least 3500 min<sup>-1</sup>. Then operate engine at idle.

After engine has been operated at idle for at least 5 sec the indicator lamp must no longer flash.

Indicator lamp O.K.?

yes

Continued on D 7 / D 8

no

Switch off ignition.  
Remove knock control unit.  
Disconnect plug and push back handle cover after removing fastening screw and sealing rubber.  
Connect knock control unit plug.  
See top picture.  
Connect dwell-angle tester to knock control unit plug.

Use only dwell-angle testers which are lifted under Coordinate A 18 (incorrect measurement).

e.g. Pocket tester KTE 001.03:

Yellow clip to term. 5 and green clip to vehicle ground.

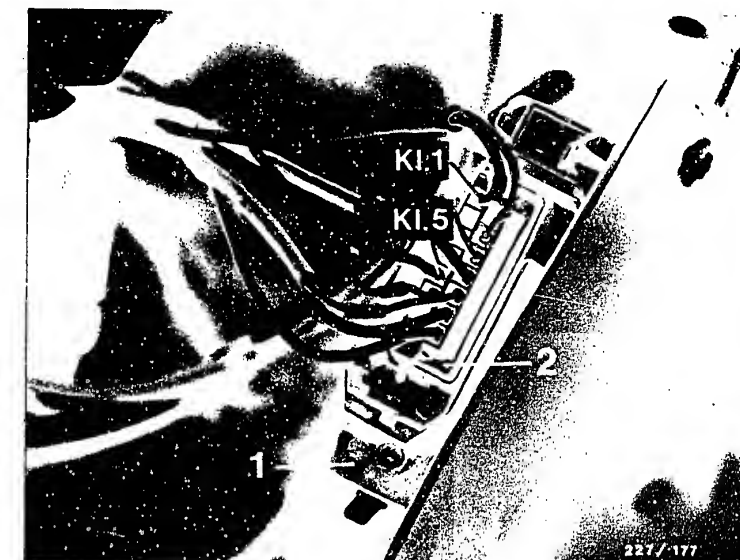
Engine must be at normal operating temperature. Start engine and run at idle. The dwell angle must be as follows:

Tester with indication in deg.	Tester with indication in %
approx 88 °	approx. 95 %

Make a note of the dwell angle. Operate engine at 5000 min<sup>-1</sup>. The dwell angle must decrease by approx. 10° or 10 % from the previously indicated value (there must be noticeable change in dwell angle).

If change in dwell angle of approx. 10° or 10 %, then replace knock control unit.

Continued on D 3 / D 4



1 = Knock control unit  
2 = Knock control unit plug

**D1**

Trouble-shooting program  
Peugeot



**D2**

Trouble-shooting program  
Peugeot



Continued

If the indicated dwell angle at idle and 5000 min<sup>-1</sup> was approx. 0° or 0 %, then

1. Remove the L-Jetronic control unit. Remove plugs from knock control unit and L-Jetronic control unit.

Connect ohmmeter to knock control unit plug term. 5 and L-Jetronic control unit plug term. 11. Ohmmeter must indicate continuity. Otherwise eliminate open circuit.

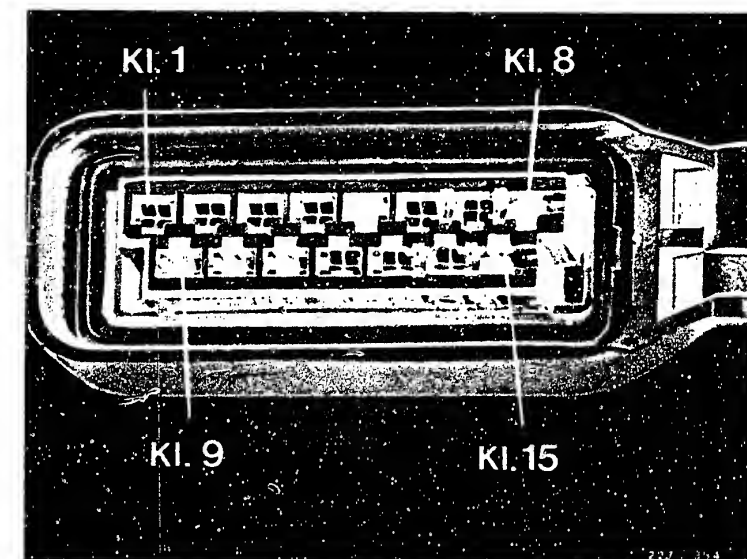
2. Connect ohmmeter to L-Jetronic control unit plug term. 11 and vehicle ground.

Ohmmeter must not indicate continuity. If continuity is indicated, then eliminate short circuit to ground in L-Jetronic control unit lead term. 11.

yes

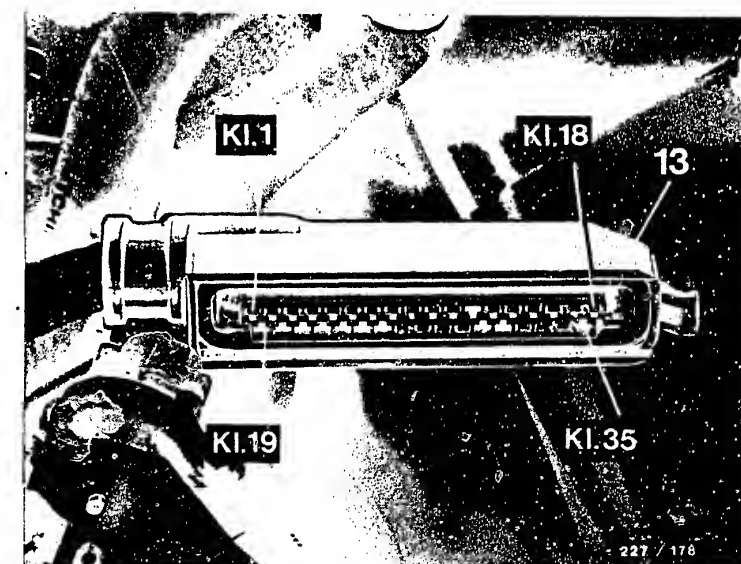
Continued on D 7 / D 8

Continued on D 5 / D 6



Knock control unit plug

13 = L-Jetronic control unit plug



D3

Trouble-shooting program  
Peugeot



D4

Trouble-shooting program  
Peugeot



Continued

3. Connect ohmmeter to knock control unit term. 5 and term. 8.

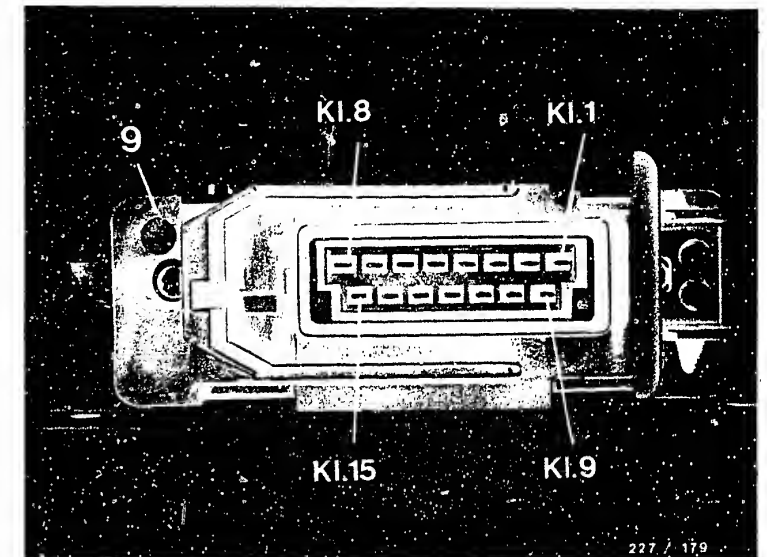
Ohmmeter must indicate 47...72 k $\Omega$ .

If the resistance is not correct, then replace knock control unit.

If the resistance is correct, then replace L-Jetronic control unit.

yes

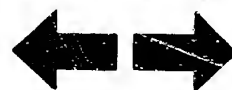
Continued on D 7 / D 8



9 = Knock control unit

D5

Trouble-shooting program  
Peugeot



D6

Trouble-shooting program  
Peugeot



yes

Test ti injection signal with engine under load.

Engine must be at normal operating temperature.

Remove knock sensor plug.

Remove top part of air filter and air filter element. (See top picture, arrow).

Start engine and operate at  $5000 \text{ min}^{-1}$ .  
Maintain accelerator position during following measurement.

2. Person must open air-flow sensor flap as far as it will go using suitable object (screwdriver or similar).  
(See bottom picture).

Note:

As a result of overenrichment there will be a sharp drop in engine speed, possibly with the engine stopping.

Indicator lamp must flash above  $1000 \text{ min}^{-1}$ .

Indicator lamp O.K.?

no

Replace L-Jetronic control unit.

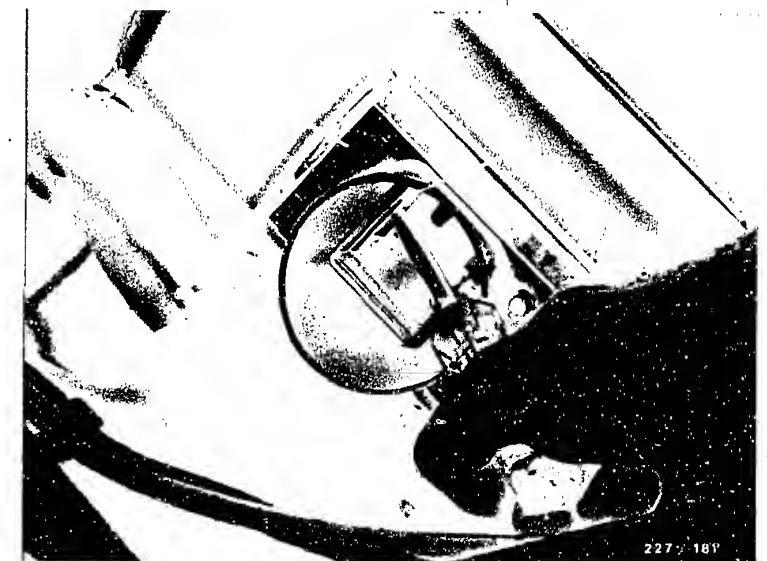
yes

Continued on D 9



1 = Top part of air filter

1 = Air-flow sensor  
2 = Sensor flap (fully opened)



**D7**

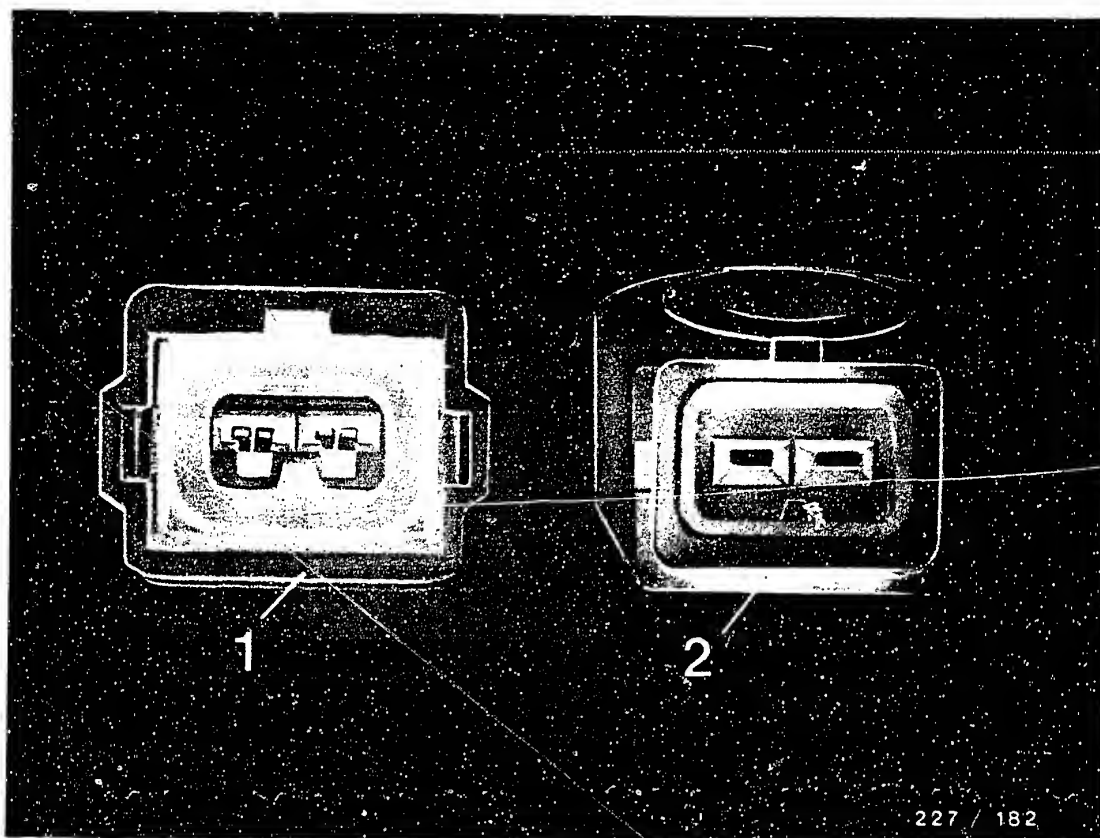
Trouble-shooting program  
Peugeot



**D8**

Trouble-shooting program  
Peugeot





1 = Knock sensor plug      2 = Knock sensor socket

↓ yes

Test knock sensor plug and socket.

Visual examination:

Remove knock sensor plug.

Check contacts of knock sensor plug and socket for oxidation. - Eliminate oxidation.

Reconnect knock sensor plug.

If customer complaint not yet eliminated, then continue testing.

↓ yes

Continued on D10/D11

**D9**

Trouble-shooting program

Peugeot



yes

Test knock control unit power supply.

Switch off ignition.  
Remove knock control unit.

Disconnect plug and push back handle cover  
after removing fastening screw and sealing  
rubber. Connect knock control unit plug.  
See top picture.

Connect voltmeter to knock control unit plug  
(term. 14 (+) and term. 8 (-)).

Run engine at idle ( $> 500 \text{ min}^{-1}$ ).

Voltmeter must indicate between 9 V and  
battery voltage.

Voltage correct?

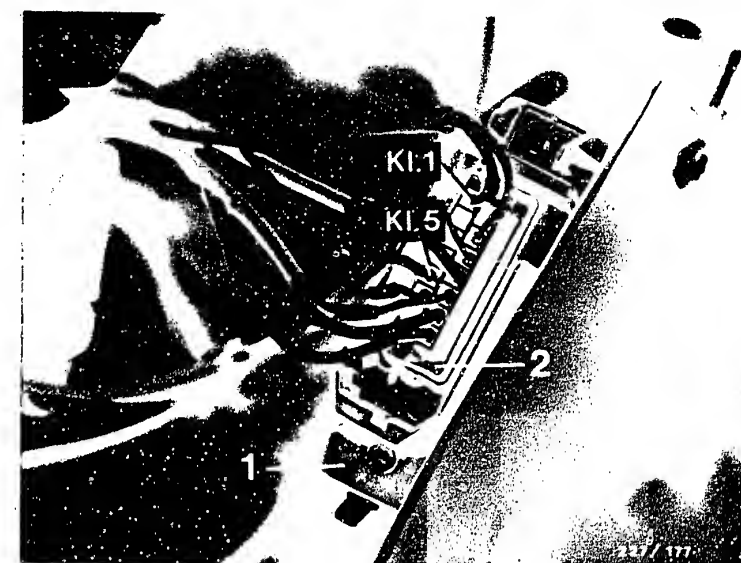
no

1. Connect voltmeter (+) to positive  
battery terminal and knock con-  
trol unit plug term. 14 (-).  
Switch on ignition and run engine  
at idle.

Voltage drop must be no more  
than 0.5 V. Eliminate voltage  
drop.

2. Connect voltmeter (-) to negative  
battery terminal and knock control  
unit plug term. 8 (+).  
Switch on ignition and run engine  
at idle.

Voltage drop must be no more than  
0.5 V. Eliminate voltage drop.



1 = Knock control unit  
2 = Knock control unit plug

yes

Continued on D12/D13

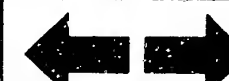
**D10**

Trouble-shooting program  
Peugeot



**D11**

Trouble-shooting program  
Peugeot





↓ yes

Test monitoring of knock sensor.

Knock sensor plug connected.  
Switch off ignition.  
Remove knock control unit (1)  
(top picture).  
Disconnect plug and push back  
handle cover after removing  
fastening screw and sealing  
rubber.  
Connect knock control unit  
plug (2). See top picture.  
Using auxiliary lead, bring  
knock control unit plug term.  
5 into contact with ground.  
Top picture.  
Start engine and run at at  
least 3500 min<sup>-1</sup>.  
Indicator lamp must not light  
up.  
Indicator Lamp O.K.?

yes

Continued on D 14/ D 15

Switch off ignition.  
Disconnect knock sensor plug and knock control  
unit plug.

1. Connect ohmmeter to:  

<u>Knock sensor plug</u>	<u>Knock control unit plug</u>
(Centre picture)	(Bottom picture)

Term. 1	and	Term. 1
Term.10	and	Term.10

Ohmmeter must indicate continuity. Otherwise  
eliminate open circuit.

2. Connect ohmmeter to:

<u>Knock sensor plug</u>	<u>Knock control unit plug</u>
Term. 1	and Term. 8

Ohmmeter must indicate open circuit ( $\infty \Omega$ ).  
If ohmmeter indicates 0  $\Omega$  (continuity),  
then eliminate short circuit to ground of  
knock sensor lead term. 1 to term. 10.

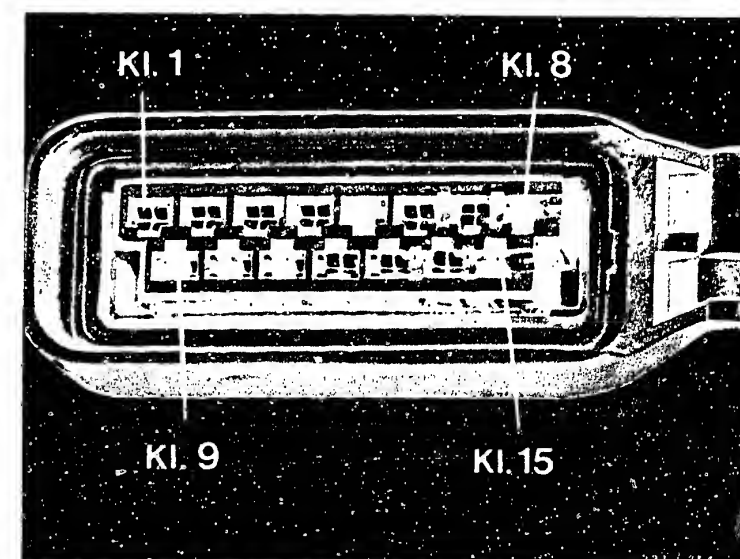
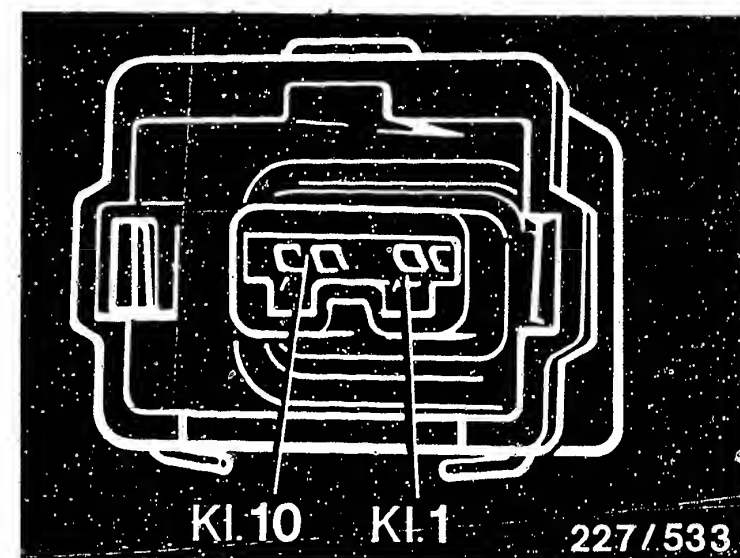
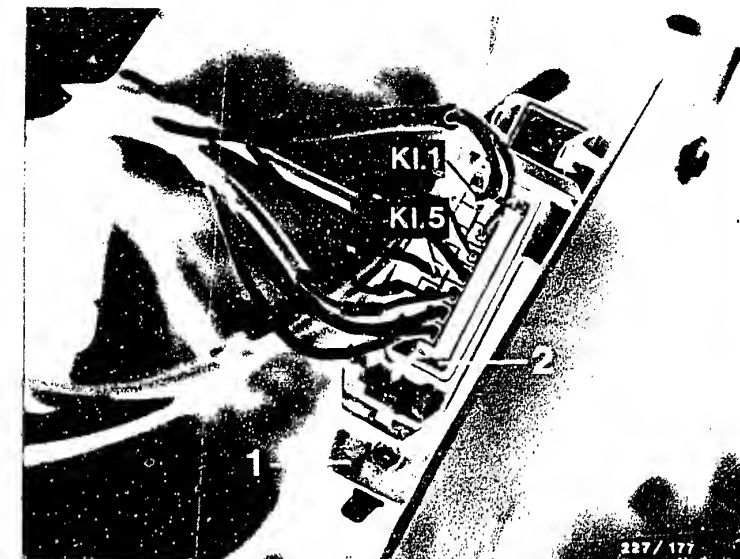
3. Connect knock sensor plug.  
Connect ohmmeter to:

<u>Knock control unit</u>	<u>Knock control unit</u>
<u>plug</u>	<u>plug</u>
Term. 1	and Term. 10

Ohmmeter must indicate 270...330 k $\Omega$ .  
If resistance not correct, then replace knock  
sensor.

4. Check tightening torque 11...15 Nm of knock  
sensor fastening screw.

If points 1 to 4 O.K., then replace knock sensor



yes

Test knock control unit evaluation circuit.

Knock sensor plug connected.

Switch off ignition.

Remove knock control unit.

Disconnect plug and push back handle cover after removing fastening screw and sealing rubber.

Connect knock control unit plug. See top picture.

Using auxiliary lead, bring knock control unit plug term. 5 into contact with vehicle ground.

Start engine and run between 500 and 1600  $\text{min}^{-1}$ .

Caution:

When starting and while testing, do not exceed 2800  $\text{min}^{-1}$ ; otherwise incorrect measurement.

If 2800  $\text{min}^{-1}$  has been exceeded, switch off ignition and start again.

Indicator lamp must not light up.

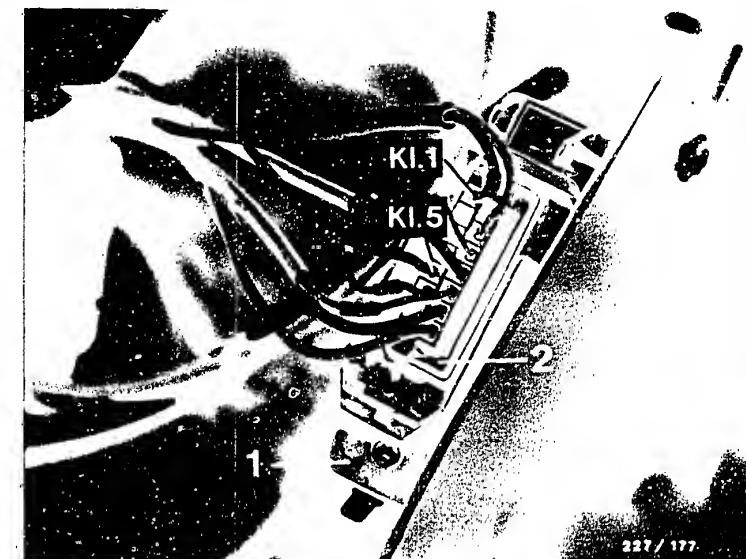
Indicator lamp O.K.?

no

Replace knock control unit

yes

Continued on D16/D17



1 = Knock control unit

2 = Knock control unit plug

**D 14**

Trouble-shooting program  
Peugeot

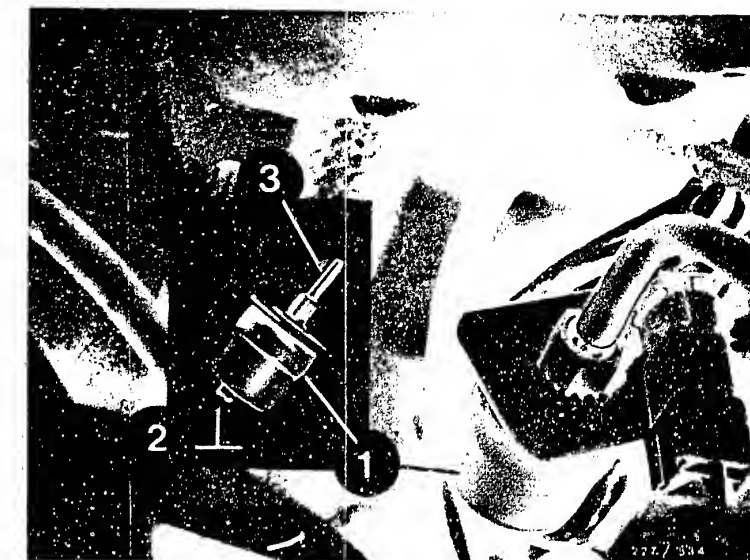
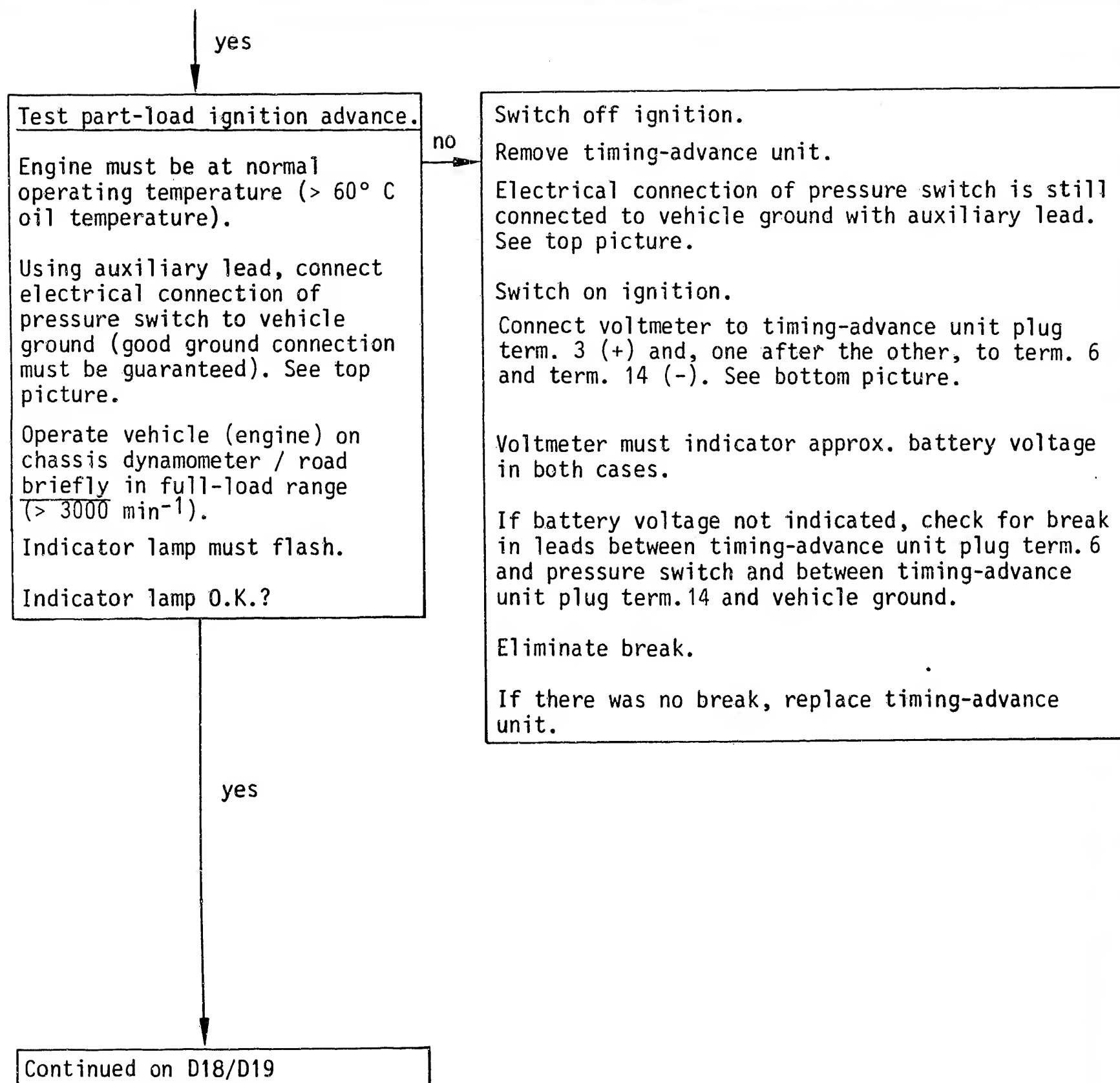


**D 15**

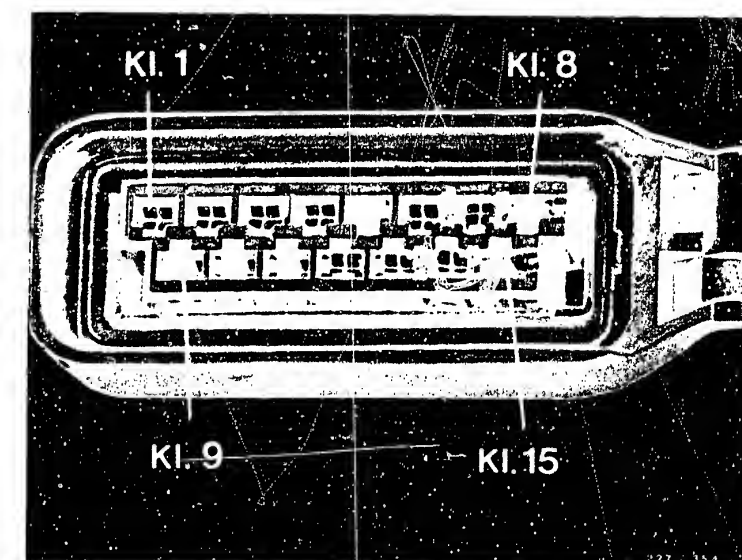
Trouble-shooting program  
Peugeot







- 1 = Pressure switch
- 2 = Electrical connection with auxiliary lead to ground
- 3 = Pressure connection



yes

### Test basic ignition setting.

(In case of clearly incorrect indication of engine speed on testers, connect in series resistor or convert motortester).

Bring engine to operating temperature (engine oil  $> 60^{\circ}\text{C}$ ).

Electrical connection of pressure switch is still connected to vehicle ground with auxiliary lead. See top picture.

Run engine at  $4000 \pm 100 \text{ min}^{-1}$ .

Flash timing light at ignition mark.

Basic ignition timing must be  $44 \pm 1^{\circ}$  BTDC.

#### Note:

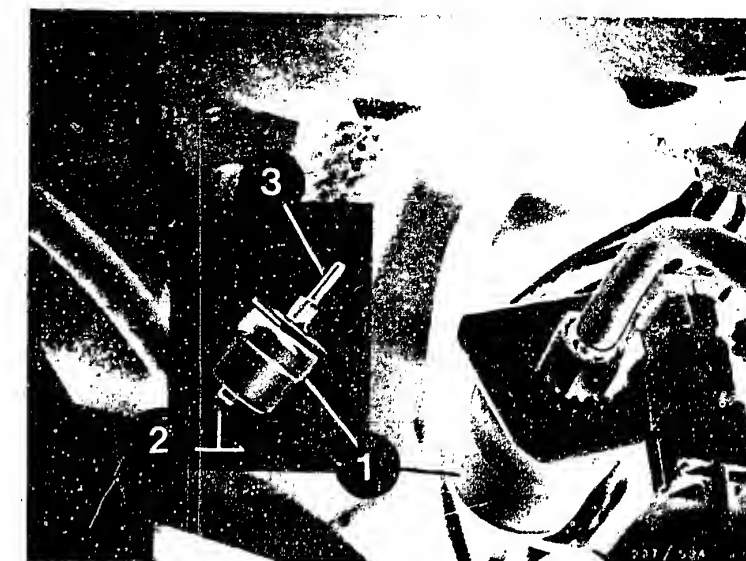
1st mark (red) in direction of rotation corresponds to  $44^{\circ}$  BTDC. See bottom picture.

Basic ignition setting O.K.?

no

Loosen distributor mounting and turn ignition distributor until  $44^{\circ}$  BTDC is reached.

See bottom picture for mark.



- 1 = Pressure switch
- 2 = Electrical connection with auxiliary lead to ground
- 3 = Pressure connection

yes

Remove auxiliary lead from pressure switch. See top picture.

yes

Continued on D20/D21



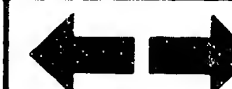
**D18**

Trouble-shooting program  
Peugeot



**D19**

Trouble-shooting program  
Peugeot



yes

Test pressure switch.

Visual examination:

Check pressure line for damage (cracks etc.) and check all connections for security. See arrow, top picture.

Pressure test:

Remove pressure switch and connect to adjusting throttle as shown in connection diagram (bottom picture).

Connect ohmmeter to pressure switch. See bottom picture.

Set approx. 0.6 bar gauge pressure at pressure regulator.

Note on adjusting throttle:  
Adjusting screw (bottom) for setting the pressure.  
Screw plug (top) is open during testing.

Ohmmeter indicates

approx.  $0 \Omega$  at  $< 80 \text{ m bar}$   
 $\infty \Omega$  at  $> 120 \text{ m bar}$

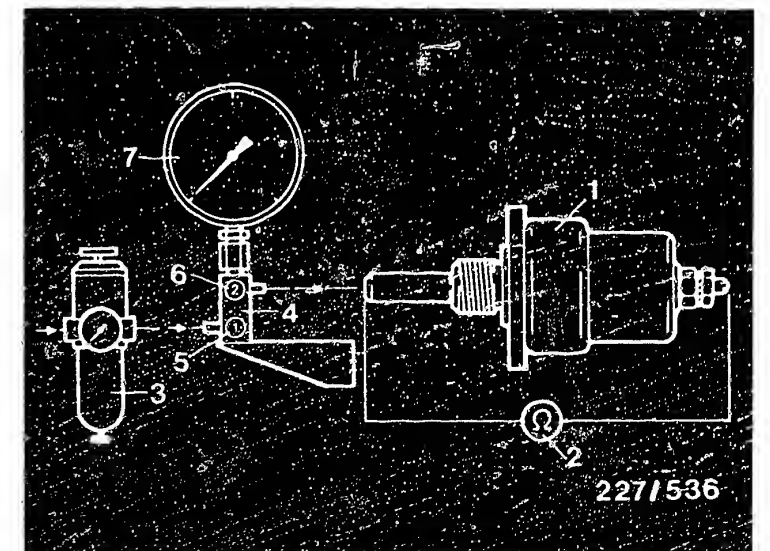
Resistance values O.K.?

no

Replace pressure switch.



- 1 = Pressure switch
- 2 = Ohmmeter
- 3 = Pressure regulator
- 4 = Adjusting throttle
- 5 = Adjusting screw
- 6 = Screw plug
- 7 = Pressure gauge



Continued on D22/D23

yes

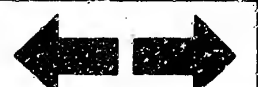
D20

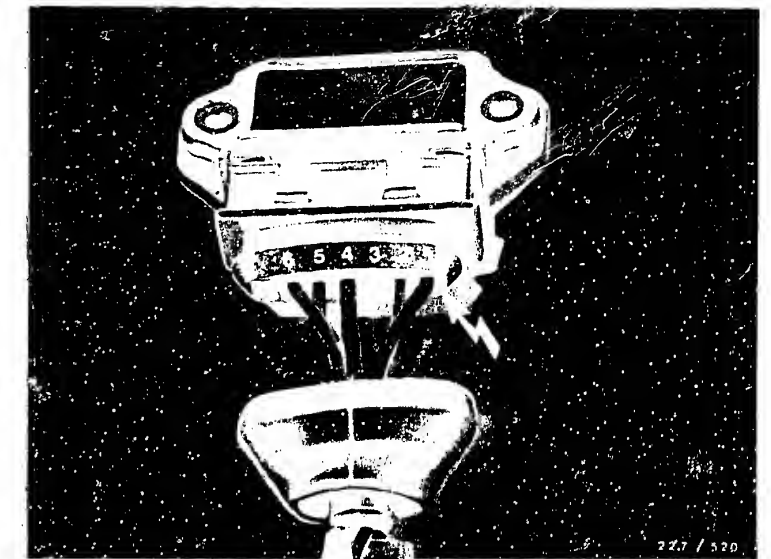
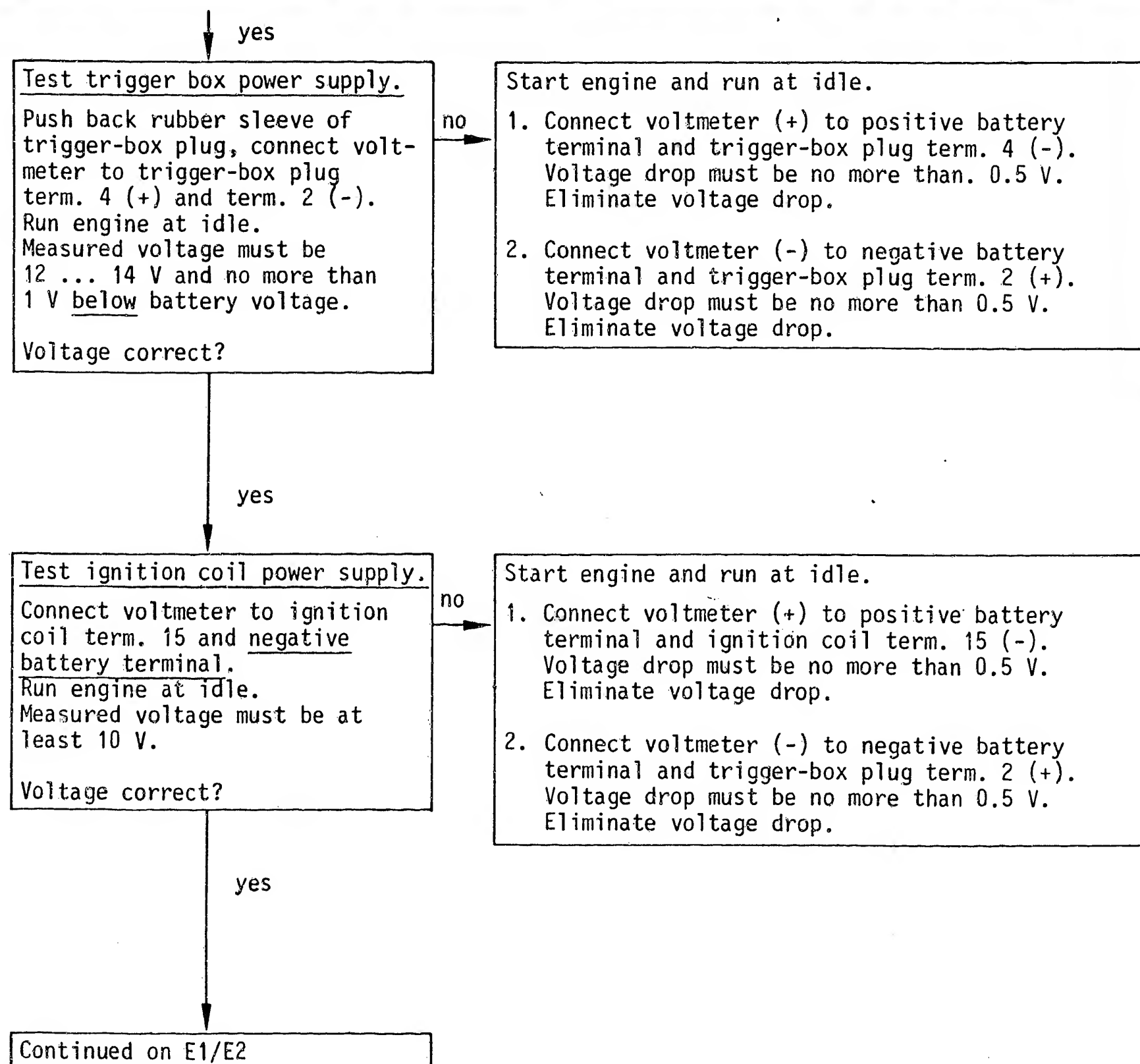
Trouble-shooting program  
Peugeot



D21

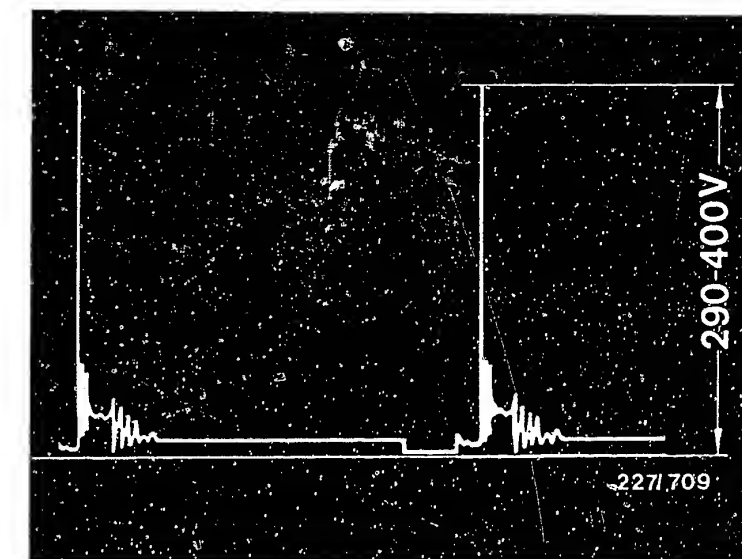
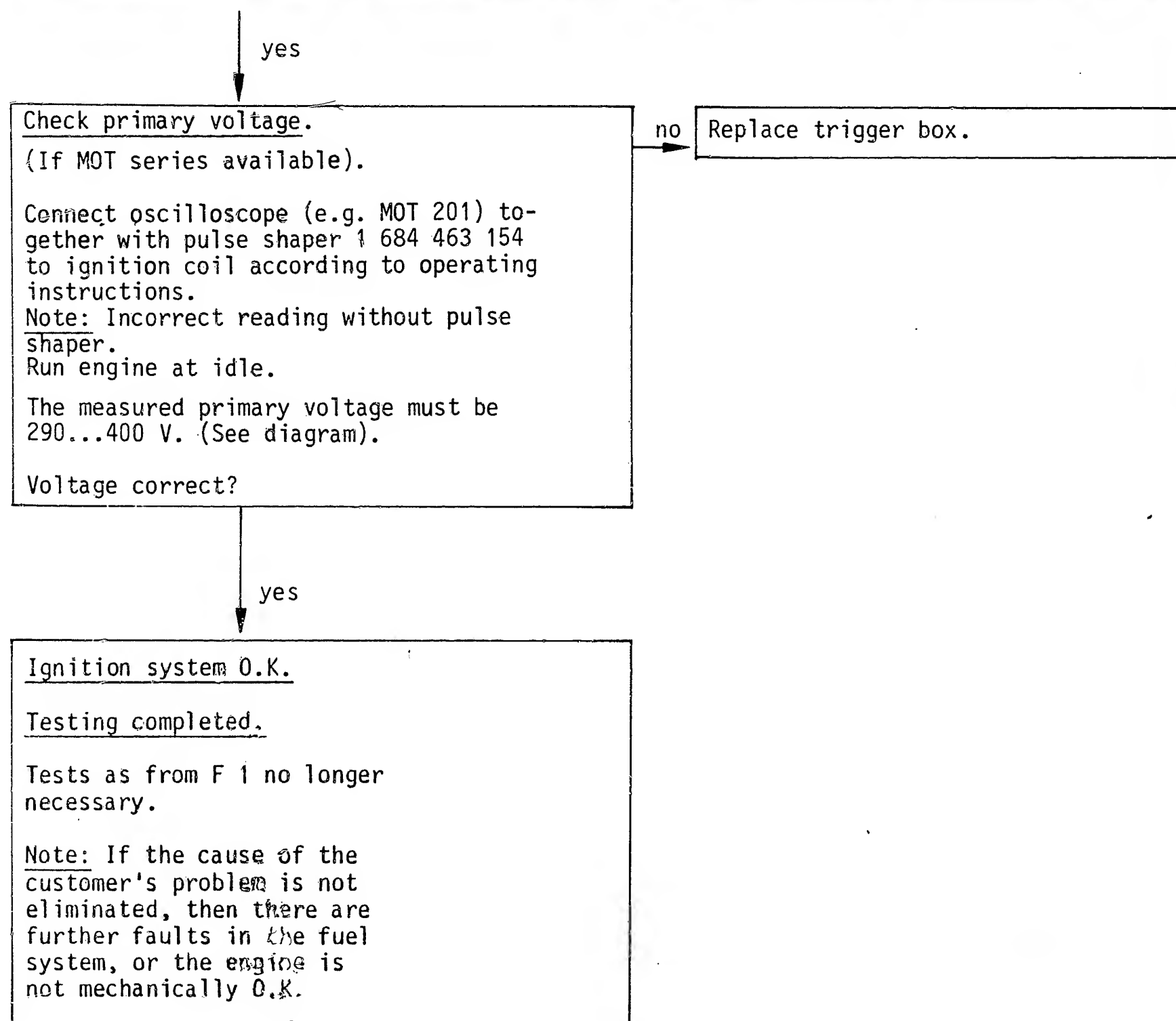
Trouble-shooting program  
Peugeot





Trigger-box plug

Danger arrows:  
 Warning, 400 V ... 25 kV



No primary signal or no ignition spark

(Continued from C 13/C 14)

yes

Test ignition distributor connector and socket.

Release locking wire on ignition distributor connector  
See arrow, top picture.

Remove ignition distributor connector.

Visual examination:

Check contacts of ignition distributor connector and socket for oxidation.

Eliminate oxidation. Reconnect ignition distributor connector.  
Start engine.

If primary signal/ignition spark not present, continue testing.

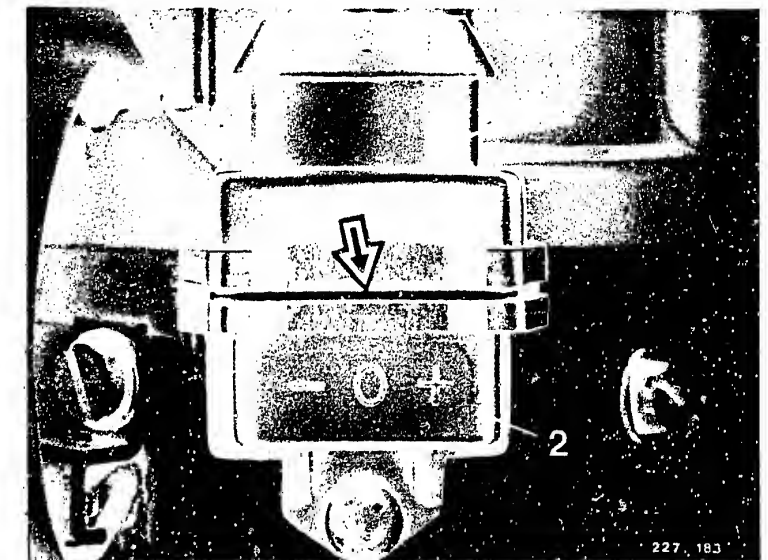
yes

Continued on F 3/ F 4

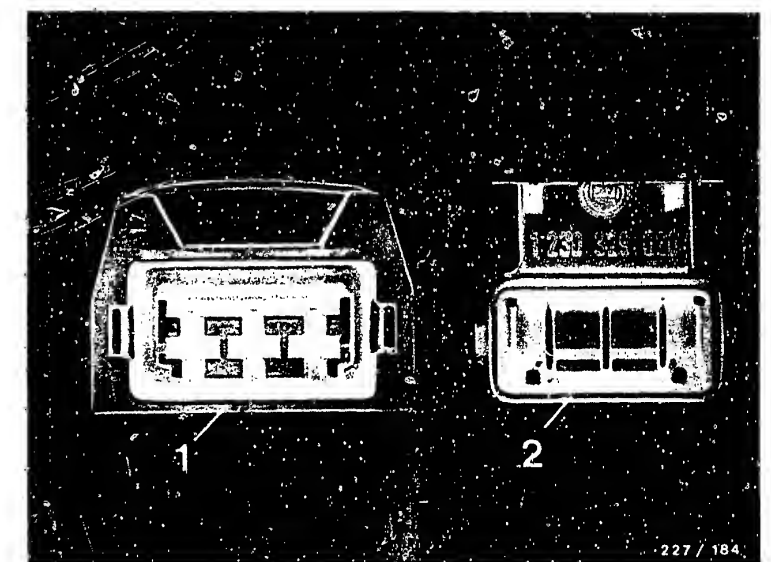
**F1**

Trouble-shooting program

Peugeot



1 = Ignition distributor connector  
2 = Ignition distributor socket



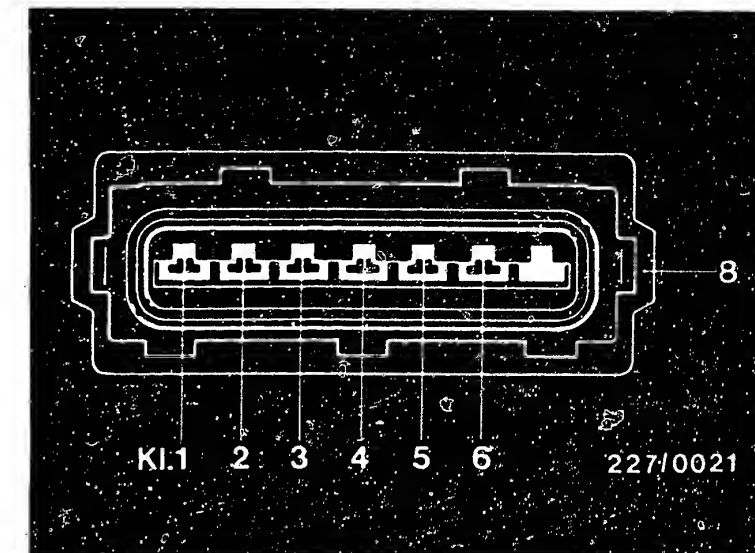
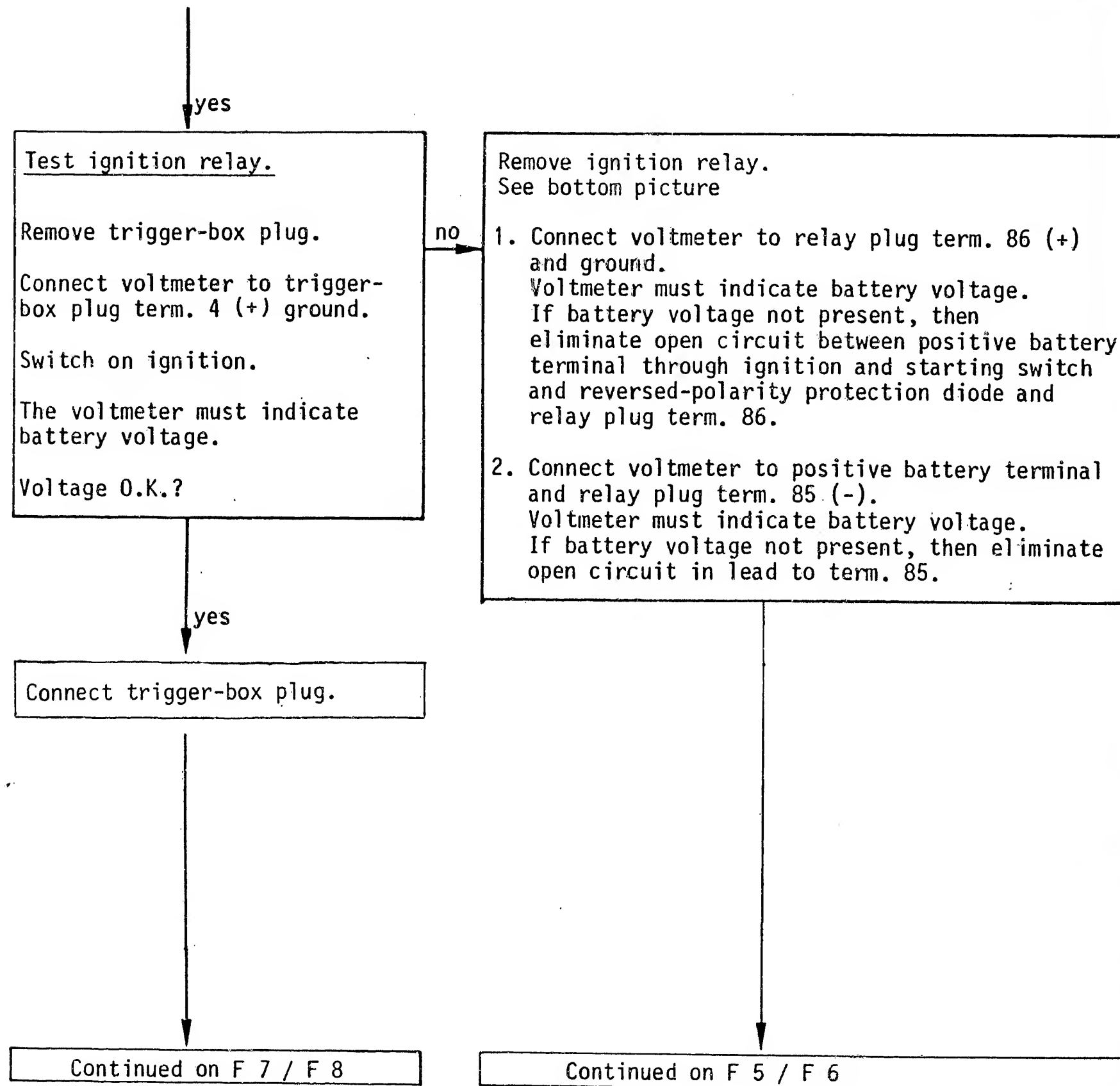
**F2**

Trouble-shooting program

Peugeot

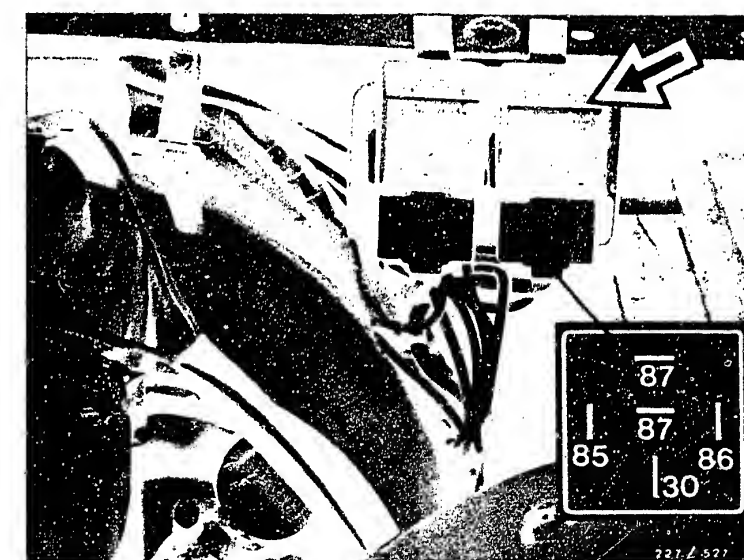






8 = Trigger-box plug

Arrow = Ignition relay with relay plug



**F3**

Trouble-shooting program  
Peugeot



**F4**

Trouble-shooting program  
Peugeot



Continued

3. Connect relay plug term. 30 and both term. 87 using auxiliary lead (bridge).  
(See arrow, bottom picture).

Connect voltmeter to vehicle ground and, one after the one, to relay plug term. 30, 87 and 87 and trigger-box plug term. 4.

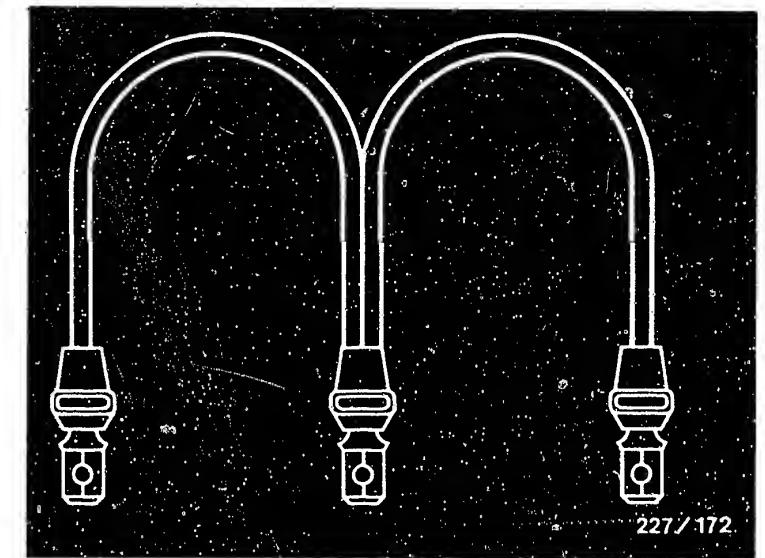
In each case voltmeter must indicate battery voltage.

If battery voltage not present, then eliminate open circuit.

If points 1, 2 and 3 O.K., replace ignition relay.

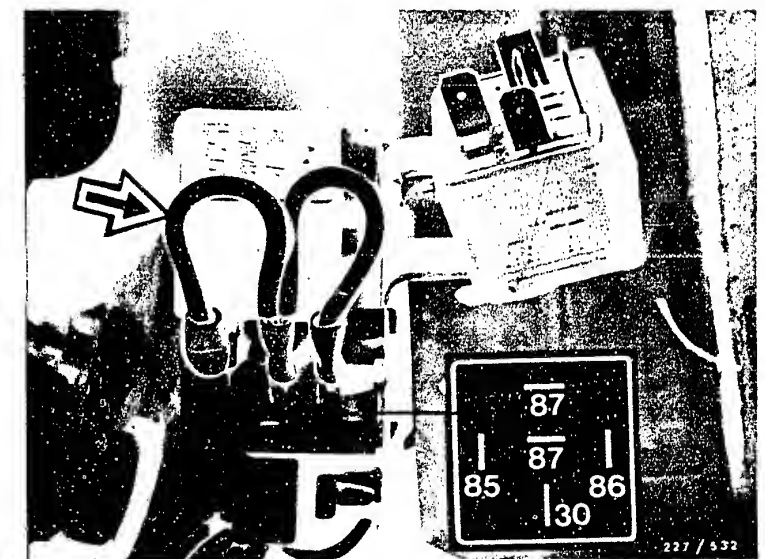
yes

Continued on F 7 / F 8



1 = Auxiliary lead (bridge)

2 = Ignition relay plug



F5

Trouble-shooting program  
Peugeot



F6

Trouble-shooting program  
Peugeot





↓  
Check ignition pulse generator power supply.

Trigger-box plug and ignition-distributor plug connected.

Push back rubber sleeve on ignition distributor plug.

Connect voltmeter to ignition distributor plug term. 4 (+) and term. 2 (-).  
See top picture.

Switch on ignition.

Voltmeter must indicate a voltage of > 10 V.

Voltage correct?

yes

Continued on F9/F10

no

Switch off ignition.

Disconnect ignition distributor plug (top picture) and ignition relay (bottom picture). Remove timing-advance unit and disconnect plug (center picture).

Connect ohmmeter one after the other to:

1. Ignition distributor plug

term. 4 and  
term. 2 and

Timing-advance unit plug

term. 4  
term. 2

Ohmmeter must indicate approx. 0  $\Omega$  (continuity) in each case.  
Eliminate open circuit.

2. Timing-advance unit plug

term. 1 and

Battery negative

term. 31

Ohmmeter must indicate approx. 0  $\Omega$  (continuity).

If resistance  $\infty\Omega$ , eliminate open circuit from timing-advance unit plug term. 1 through knock-control unit plug term. 8 to trigger box term. 3 through ground jumper term. 3 and term. 2 in trigger box, including ground lead term. 2.

3. Timing-advance unit plug

term. 3 and

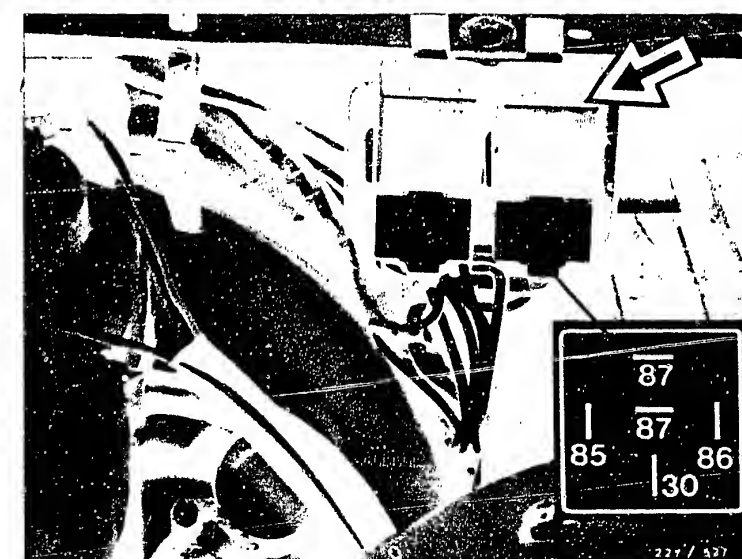
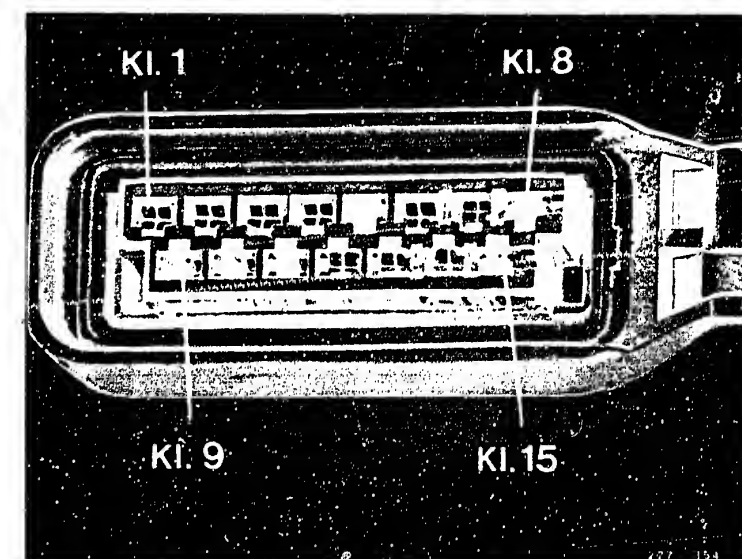
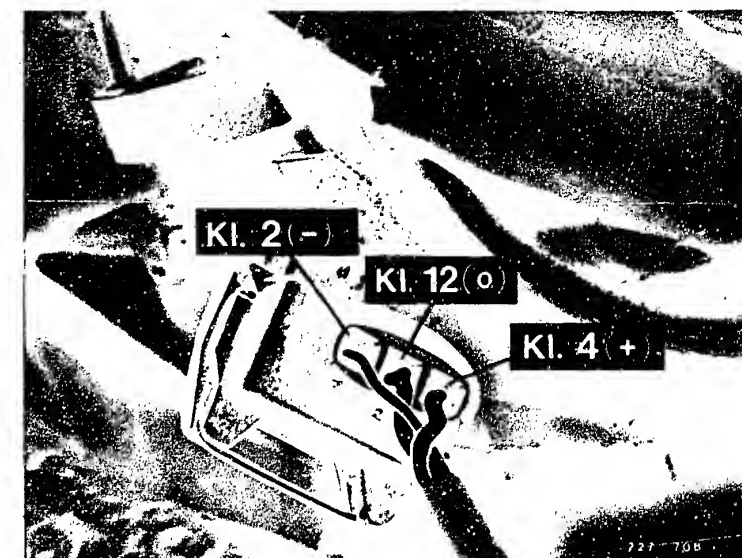
Ignition-relay plug

term. 87

(arrow, bottom picture)

Ohmmeter must indicate approx. 0  $\Omega$  (continuity).  
Eliminate open circuit.

If there was no open circuit in points 1, 2 and 3, replace timing-advance unit.



F7

Trouble-shooting program  
Peugeot



F8

Trouble-shooting program  
Peugeot



yes

Check timing-advance unit pulse. no

Replace ignition pulse generator and/or ignition distributor

Remove timing-advance unit. Disconnect plug and push back handle after unscrewing fastening screw and taking off sealing rubber. Connect timing-advance unit plug.

Connect oscilloscope according to operating instructions with program switch in "special" position.

For example, MOT 201:

Red clamp to timing-advance unit plug term. 12 (measured signal). See top picture.

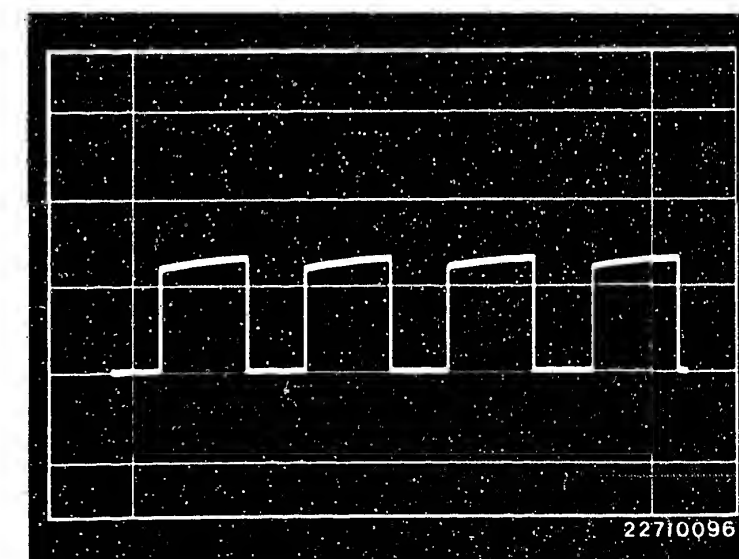
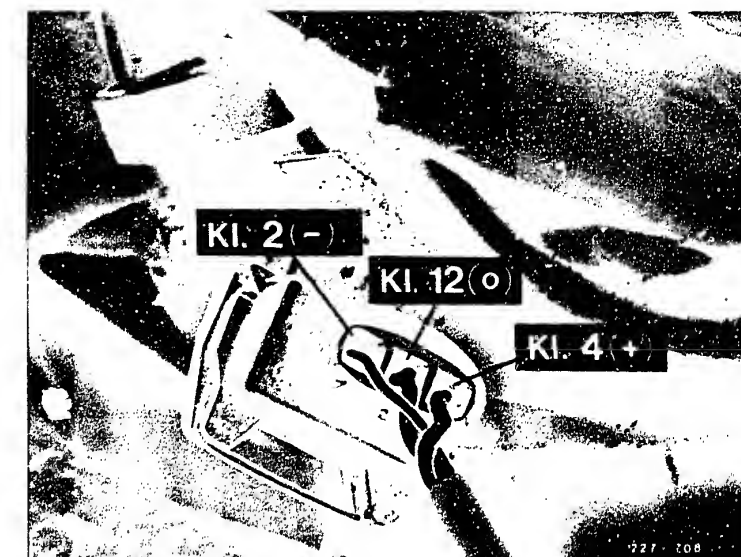
Black clamp to vehicle ground.

Start engine.

Oscilloscope must indicate a rectangular pulse. See bottom picture.

Rectangular pulse present?

Continued on F 11/ F 12



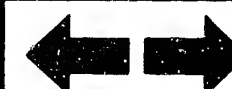
**F9**

Trouble-shooting program  
Peugeot



**F10**

Trouble-shooting program  
Peugeot



yes

### Test ignition timing unit pulse.

Remove ignition timing unit  
(do not remove plug).

Connect oscilloscope as per  
operating instructions with  
program switch in "special"  
position.

MOT 201 for example:

Red clamp to timing-advance  
unit plug term. 13 (measured  
signal.)

See top picture.

Black clip to vehicle ground.  
Start engine.

The oscilloscope must show a  
rectangular pulse. See  
diagram.

Rectangular pulse present?

no

Disconnect ignition distributor plug and timing-  
advance unit plug.

Connect ohmmeter to:

Ignition distributor  
plug

(Centre picture

Term. 12

and

Timing-advance  
unit plug

(Centre pict.

Term. 12

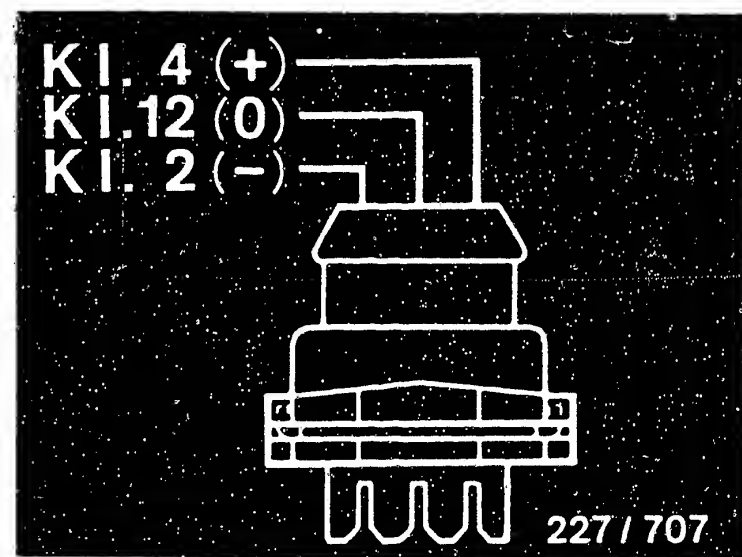
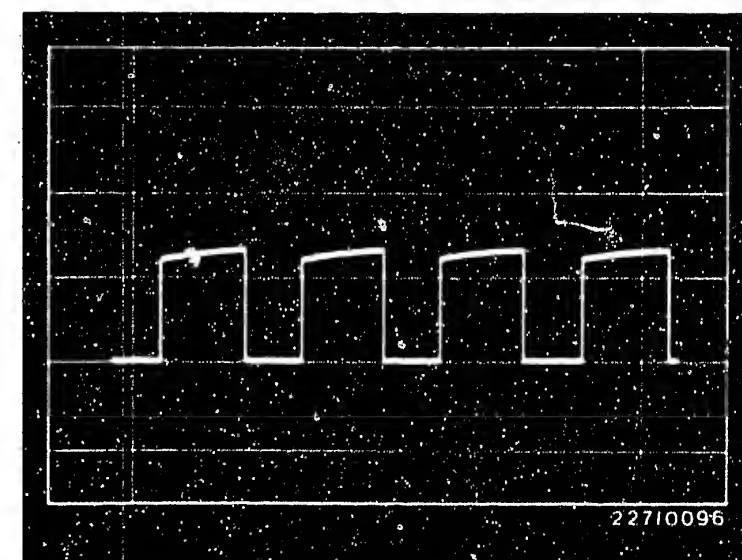
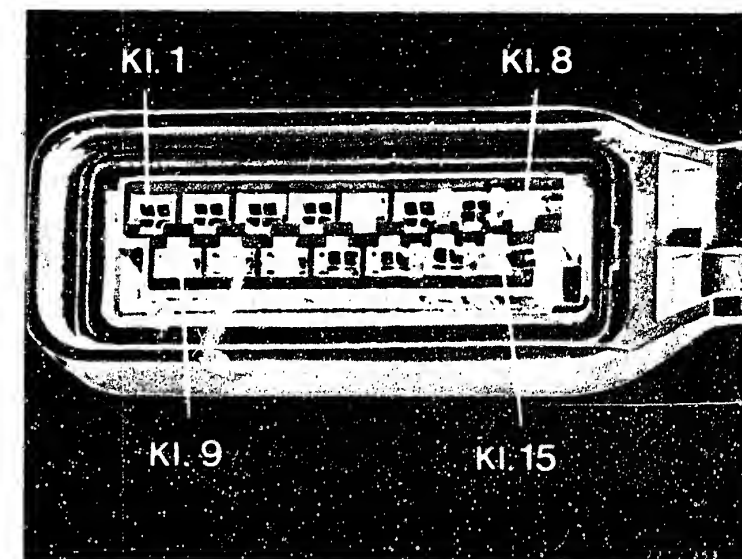
Ohmmeter must indicate approx. 0  $\Omega$  (continuity).

Eliminate open circuit.

If there was no open circuit, replace timing-  
advance unit.

yes

Continued on F 13 / F 14



F11

Trouble-shooting program

Peugeot



F12

Trouble-shooting program

Peugeot



yes

### Test knock control unit.

Switch off ignition.

Remove knock control unit.

Disconnect plug and push back handle cover after removing fastening screw and sealing rubber.

Connect knock control unit plug.  
See top picture.

Connect oscilloscope according to operating instructions with program switch in "special" position.

For example, MOT 201:  
Red clamp to knock control unit plug term. 13 (measured signal).  
See top picture, Item 2.  
Black clamp to vehicle ground.

Start engine.

Oscilloscope must indicate a rectangular pulse.  
See centre picture.

Rectangular pulse present?

yes

Continued on F17/F18

no

Switch off ignition.

Disconnect knock control unit plug and timing-advance unit plug.

Connect ohmmeter to:

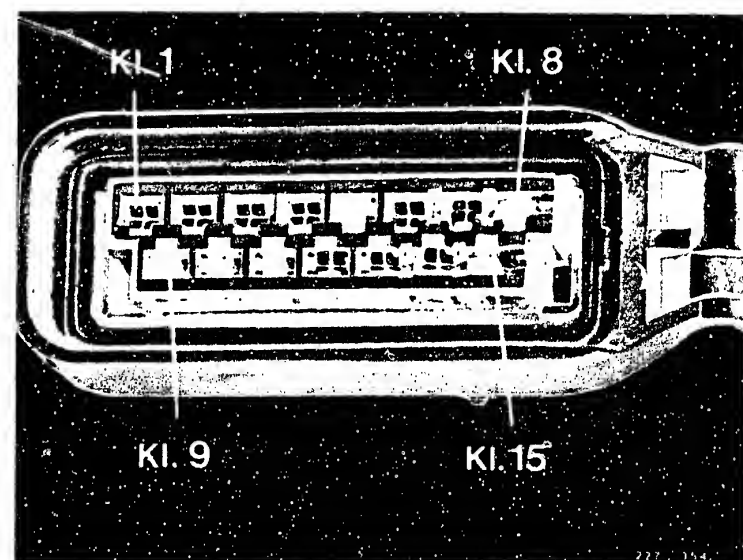
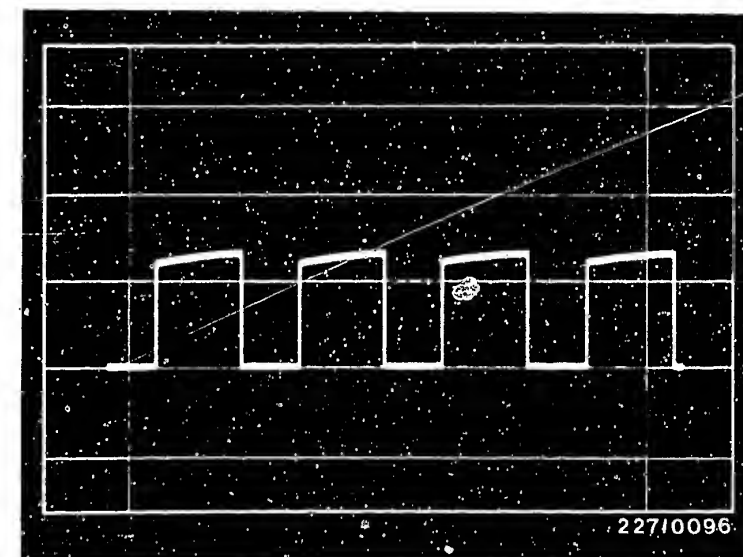
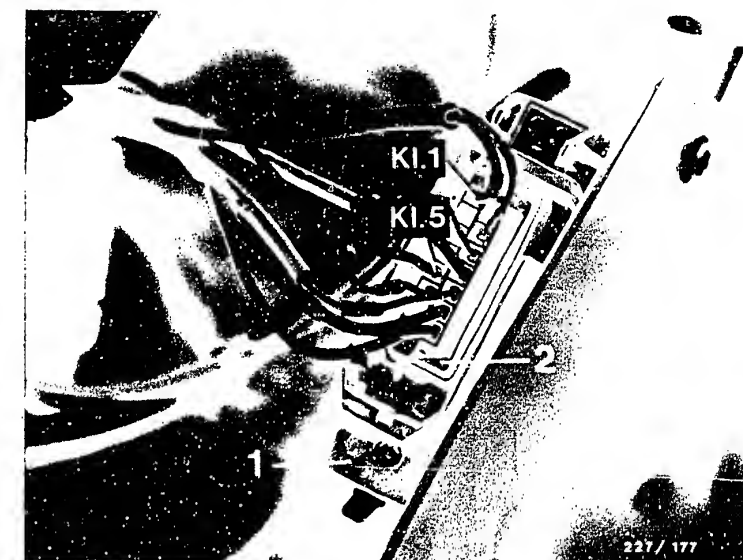
<u>Knock control</u>	<u>Timing-advance</u>
<u>unit plug</u>	<u>unit plug</u>
(Bottom picture)	(Bottom picture)

Term. 6 and Term. 13

Ohmmeter must indicate approx.  
0  $\Omega$  (continuity).

Eliminate open circuit.

Continued on F15/F16



**F13**

Trouble-shooting program  
Peugeot



**F14**

Trouble-shooting program  
Peugeot



Continued

Knock control unit plug

Term. 14

and

Ignition relay plug

Term. 87

(Arrow-bottom pict.)

Ohmmeter must indicate approx. 0  $\Omega$  (continuity).  
Eliminate open circuit.

Knock control unit plug

Term. 8

and

Battery negative

Term. 31

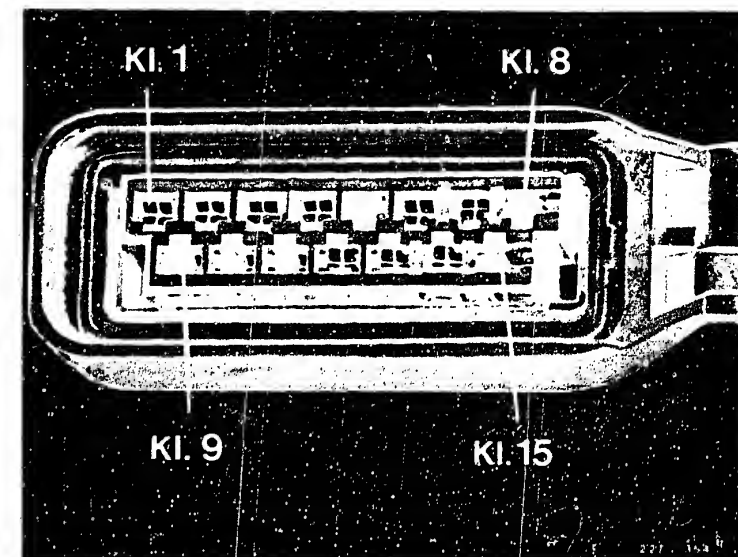
Ohmmeter must indicate approx. 0  $\Omega$  (continuity).

Eliminate open circuit from knock-control unit  
plug term. 8 to trigger box term. 3 through  
ground jumper term. 3 and term. 2 in trigger  
box including ground lead term. 2.

If there was no open circuit, replace knock-  
control unit.

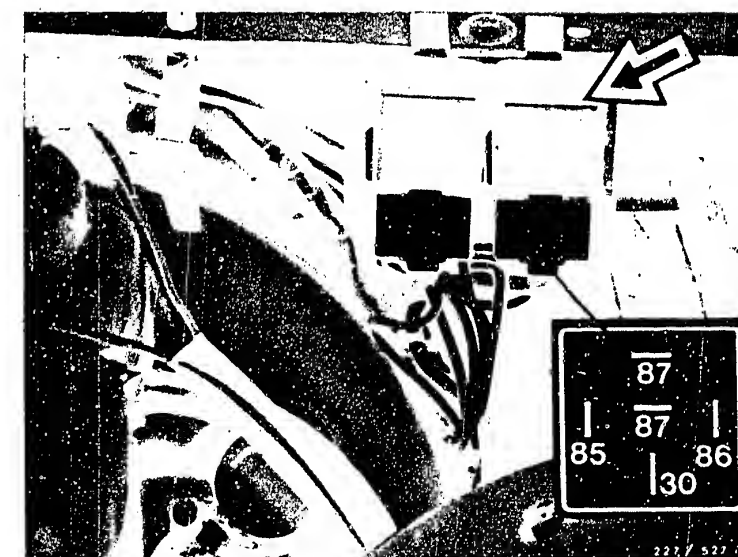
yes

Continued on F17/F18



Knock control unit plug

Arrow=Ignition relay



**F15**

Trouble-shooting program  
Peugeot



**F16**

Trouble-shooting program  
Peugeot





yes

### Test trigger box control line.

Remove trigger-box plug.  
See top picture.  
Connect oscilloscope as per  
operating instructions with  
program switch in "special"  
position.

For example, MOT 201:  
Red clamp consecutively to  
trigger-box plug term. 5 and 6  
(measured signal).  
See top picture.

Black clip to vehicle ground.  
Start engine.  
The oscilloscope must show a  
rectangular pulse at both  
terminals. See diagram.  
See centre picture.  
Rectangular pulse present?

no

Switch off ignition.  
Disconnect knock control unit plug.  
See bottom picture.  
Connect ohmmeter consecutively to:

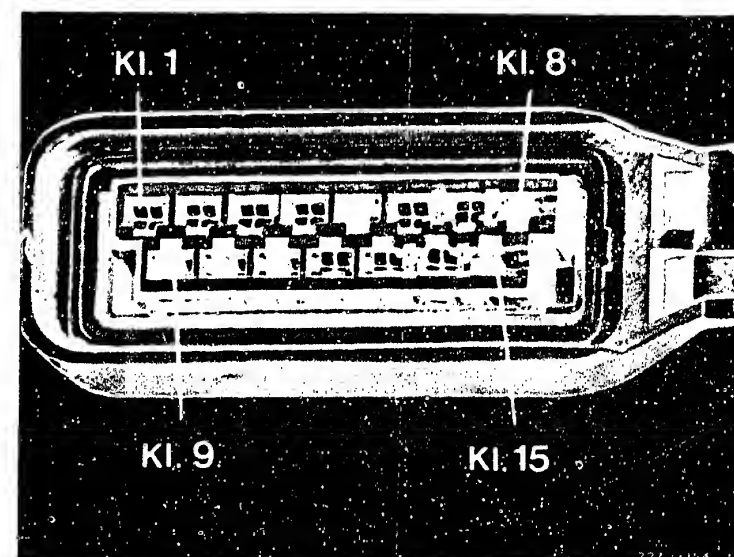
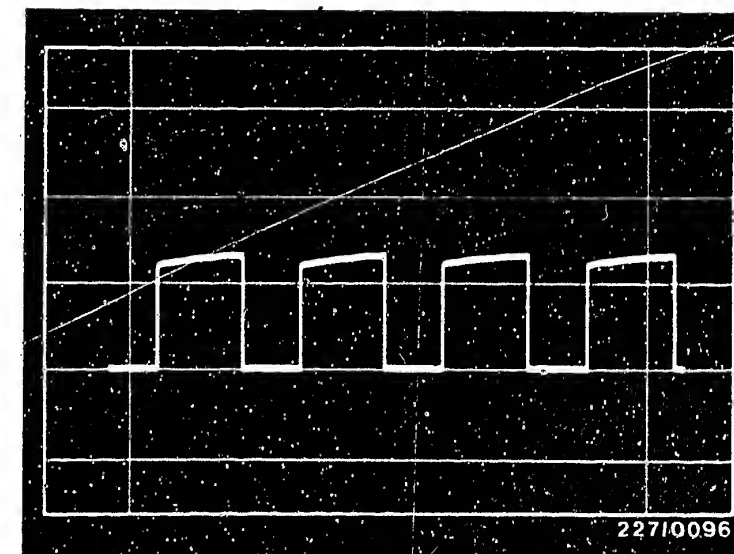
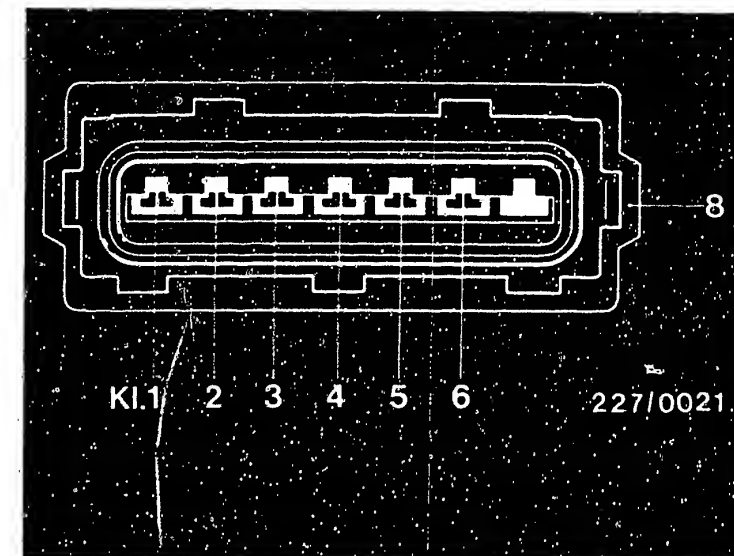
Knock control unit plug	Trigger-box plug
-------------------------	------------------

Term. 13	and Term. 5
Term. 13	and Term. 6

Ohmmeter must indicate approx. 0  $\Omega$  (continuity).  
Eliminate open circuit.

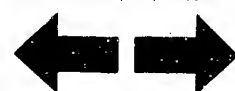
yes

Continued on F 19 / F 20



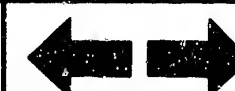
**F17**

Trouble-shooting program  
Peugeot



**F18**

Trouble-shooting program  
Peugeot



yes

Test trigger box ground connection.

Remove trigger-box plug.

Connect voltmeter to trigger-box plug term. 4 (+) and term. 2 (-).

Switch on ignition.

The voltmeter must indicate battery voltage.

Voltage O.K.?

no

Test trigger-box plug ground lead term. 2 for open circuit.

Eliminate open circuit.

yes

Test primary circuit.

Connect voltmeter to disconnected trigger-box plug term. 1 (+) and term. 2 (-).

Switch on ignition.

The voltmeter must indicate battery voltage.

Voltage O.K.?

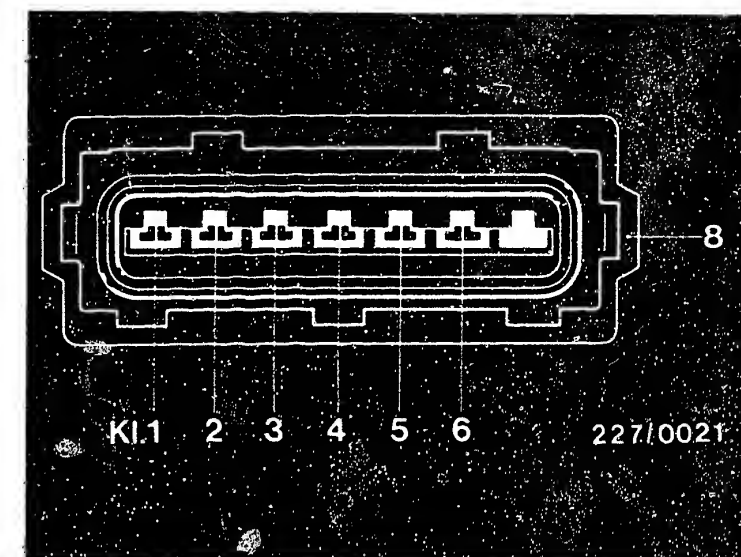
no

Check for break in lead between power-supply relay term. 87 (arrow in bottom picture) and ignition coil term. 15, in primary winding of ignition coil, and in lead between ignition coil term. 1 and trigger-box plug term. 1.

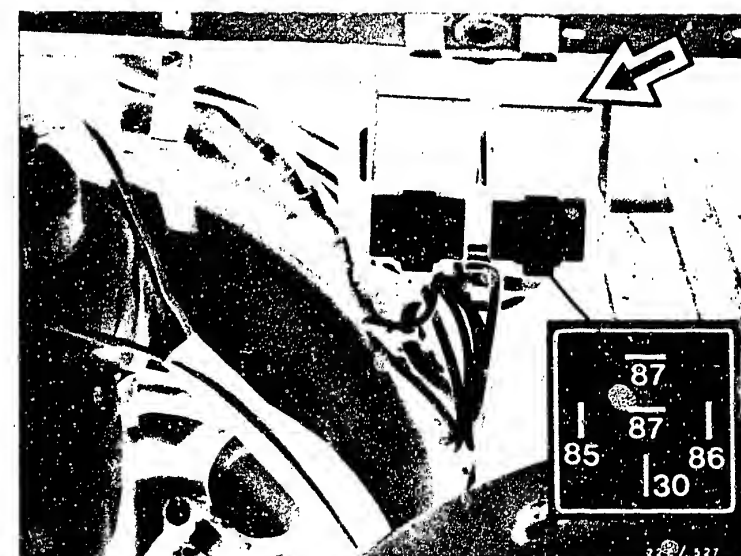
Eliminate break.

yes

Continued on F21 / F 22



8 = Trigger-box plug



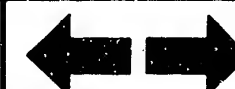
**F19**

Trouble-shooting program  
Peugeot



**F20**

Trouble-shooting program  
Peugeot



yes

### Test ignition coil.

#### Visual examination:

Check whether plug (see picture) is present and/or whether sealing compound has escaped.

#### Electrical test:

Ignition coil primary (term. 15 and term. 1)  
0.7...1.2  $\Omega$  (take resistance of test lead and test prods into account).  
Ignition coil secondary (term. 1 and term. 4)  
6.9...11.9 k $\Omega$ .

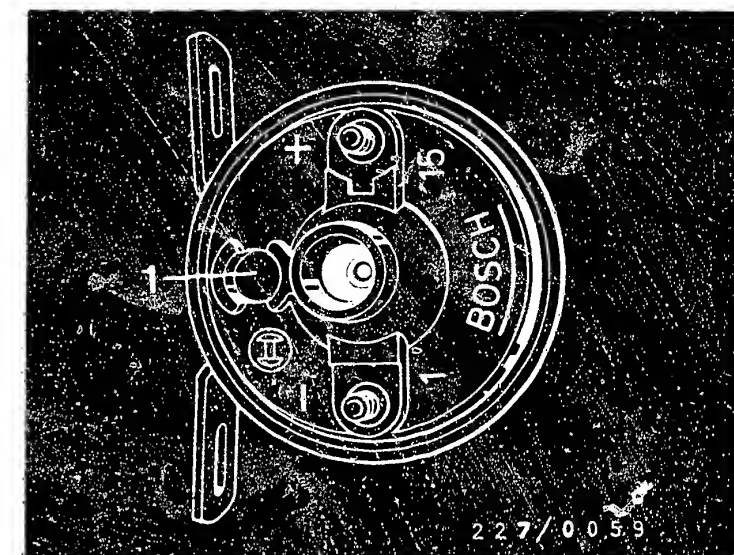
Plug in position and no sealing compound escaped.

Resistance O.K.?

no

1. If plug is not in position and/or sealing compound has escaped, then replace trigger box and knock control unit as well as ignition coil.

2. If resistance values are not O.K., then replace ignition coil.



1 = Plug

yes

Replace trigger box.

#### Testing completed.

Tests as from C 15 not necessary.

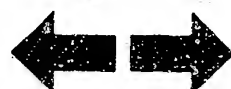
#### Note:

If the cause of the customer's problem is not eliminated, then there are further faults in the fuel system, or the engine is not mechanically O.K.

**F21**

Trouble-shooting program

Peugeot



**F22**

Trouble-shooting program

Peugeot





# After-sales Service

## Technical Bulletin

Only for use within the Bosch organization. Not to be communicated to any third party.

22

### Danger of Accident on Semi-conductor Ignition Systems

VDT-I-227/102 B

11.1976

Please be sure to pass this bulletin on to your employees for their attention.

The increased demands made on their ignition systems by modern engines, and the wish for freedom from maintenance, led some time ago to manufactures starting to equip their vehicles with semi-conductor ignition systems as original equipment. In most cases the performance of nearly all makes of such systems is higher than that of conventional systems, and further improvements are to be expected. This means that semi-conductor ignition systems have reached the point where contact with "live" parts or contacts (whether on the primary side or the secondary side) can prove fatal.

In this connection we should like to point out to you that the laws valid in your country regarding work on high-voltage systems must be adhered to when working on, or testing, semi-conductor ignition systems.

As a matter of principle, when working on such ignition systems the ignition is to be switched off. Included in such work are the following operations:

- Connection of engine testing equipment (timing light, dwell-tach tester, ignition oscilloscope etc.).
- Replacement of ignition system parts (spark plugs, ignition coil, ignition distributor, H.T. ignition cables etc.).

If it is necessary to switch on the ignition in order to test the system or make adjustments on the engine (to the carburetor for instance), then lethal voltages are present throughout the entire system.

This means that the danger of accident exists not only of individual components in the system (e.g. ignition distributor, ignition coil, trigger box, ignition harness), but also of the wiring harness (e.g. connection for the tachometer, diagnostic connector), on terminals, and on test equipment.

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**N1**

Technical Bulletin

Peugeot

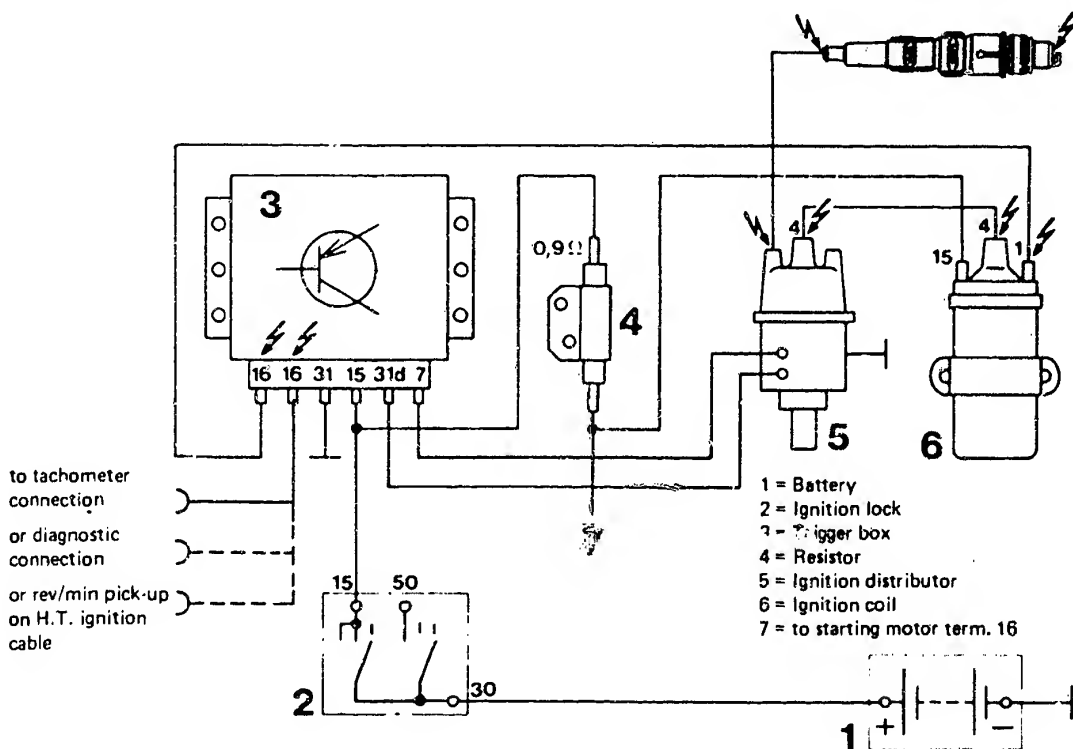


In addition, in the case of the capacitor-discharge ignition system (CDI), danger of accident is also present under the following circumstances:

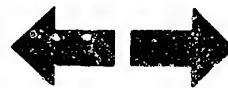
- Operation of the trigger box without the ignition transformer.
- At the trigger box, (removed), relatively soon after it has been switched off (capacitor discharge).

Below is a typical terminal diagram of a semi-conductor ignition system, the danger points are marked with red high-voltage arrows. We would point out that all semi-conductor ignition systems, even the older ones, are to be regarded as dangerous in the sense as defined by this bulletin.

Please address any queries or comments concerning the contents of this publication to our representative in your country.



Terminal diagram



# After-sales Service

## Technical Bulletin

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EFFECTS OF ELECTRICAL AND ELECTRONIC  
SYSTEMS ON HEART PACEMAKERS

VDT-I-227/107 En  
1.1981

e.g. ignition systems, Jetronic, Motronic, ABS

Please ensure without fail that this Bulletin is passed on to your employees for their attention!

We have often been asked by some of our customers whether or not patients with heart pacemakers are endangered in any way by ignition systems. This theme was recently the subject of an examination carried out by the Ignition System Development Department of Robert Bosch GmbH in conjunction with Dr. Thull, lecturer at the Central Institute for Biomedical Technology at the University of Erlangen-Nürnberg and Biotronic GmbH & Co. of Berlin, a manufacturer of heart pacemakers. The magazine "Biomedizinischen Technik" (5/80) listed the results.

The most important discoveries in this practice can be summarized from the examination report as follows:-

1. Heart pacemakers corresponding to the latest state of the art are not affected by radiation (electromagnetic fields) from ignition systems.
2. With a stationary engine and the ignition switched off the heart pacemaker is not affected by any part of the ignition system, even when unintentionally touched. Maintenance work in the engine compartment, for example, can then be carried out without any danger.
3. With the engine running or stationary with the ignition switched on, touching current-carrying parts of the ignition system, as well as parts of any other electrical system, presents a certain danger for everybody. The heart pacemaker can here be affected under certain conditions (voltage, current and frequency).  
Patients with heart pacemakers should therefore at all costs avoid touching current-carrying parts of electrical systems.
4. Furthermore, patients with heart pacemakers are more inclined to psychic shock effects than other people, even when they receive just a harmless electric shock, because many such patients are conscious of the increased danger to the cardiac activity.

We therefore consider it inadvisable for patients with heart pacemakers to be employed in workshops or on vehicles where ignition systems are being tested or repaired. If any members of your staff have heart pacemakers please carry out the necessary measures.

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**N3**

Technical Bulletin  
Peugeot



We would like to add that heart pacemakers are not expected to be affected in any way by interference from other electronic products and systems which we manufacture, such as the Antiskid System (ABS), Jetronic, Motronic, because the much greater radiation intensity of the ignition systems examined in normal use has not caused any interference to heart pacemakers corresponding to the latest state of the art.

If you should receive questions on this matter from customers, please inform them accordingly.



# After-sales Service

## Technical Bulletin

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### BREAKERLESS TRANSISTORIZED IGNITION SYSTEM

22

#### Warranty note

VDT-I-227/103 En  
3.1979

Hybrid construction trigger boxes  
0 227 100 100 for ignition distributor  
with Hall generator (TCI-h)  
0 227 100 102 for ignition distributor  
with induction-type  
pulse generator (TCI-i)

Apart from the well-known TCI trigger boxes 0 227 100 0.., trigger boxes of hybrid construction have been fitted as standard since 9.78 (Fig. 1).

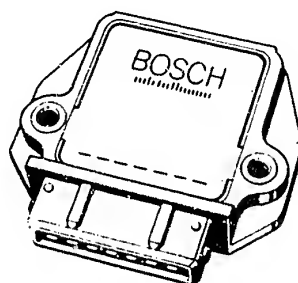


Fig. 1

#### Warranty procedure

If the complaints are justified, all these Hybrid trigger boxes are to be sent, along with completed warranty documents, to your authorized representative for forwarding to the following address:

ROBERT BOSCH GMBH  
KH/LAV - Auspackraum

zur Weiterleitung an K1/VAK 21

D-7000 Stuttgart 30

This instruction remains valid until further notice.

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**N5**

Technical Bulletin

Peugeot



# After-sales Service

## Technical Bulletin

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NEW DESIGNATIONS FOR IGNITION SYSTEMS

VDT-1-227/108 En

1.1983

The introduction of new ignition systems has made it necessary to reclassify all designations.

The designations listed below will be used immediately in KH workshop and sales literature.

Designation	Abbrev'd code	Meaning	Switching	Ignition control and spark advance	High-voltage distribution
Coil ignition	SZ (CI)	-----	Mechanical (breaker points)	Mechanical (ignition distributor)	Mechanical (ignition distributor)
Transistorized coil ignition	TSZ-K (TCI-c)	K=breaker-triggered	Electronic (trigger box)	Mechanical (ignition distributor)	Mechanical (ignition distributor)
Trigger box with conventional circuit techniques	TSZ-I* (TCI-i)	I=Induction-type pulse generator	Electronic (trigger box)	Mechanical (ignition distributor)	Mechanical (ignition distributor)
	TSZ-H	H=Hall generator	Electronic (trigger box)	Mechanical (ignition distributor)	Mechanical (ignition distributor)
Transistorized ignition	TZ-I* (TI-i)	I=Induction-type pulse generator	Electronic (trigger box)	Mechanical (ignition distributor)	Mechanical (ignition distributor)
(Trigger box in Hybrid technique)	TZ-H* (TI-h)	H=Hall generator	Electronic (trigger box)	Mechanical (ignition distributor)	Mechanical (ignition distributor)

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Technical Bulletin

Peugeot



Designation	Abbrev'd code	Meaning	Switching	Ignition control and spark advance	High-voltage distribution
Breakerless semiconductor ignition with or without knock control	EZ EZ-K	- K=Knock control	Electronic (trigger box or control unit)	Electronic (control unit)	Mechanical (ignition distributor or high-voltage distributor)
Distributorless ignition with or without knock control	VZ VZ-K	- K=Knock control	Electronic (control unit)	Electronic (control unit)	Electronic (dual-spark ignition coil, or 1 ignition coil for each spark plug)

\*Note: The ignition system can also be equipped with a DLS unit (digital idle stabilization) or with an ELS unit (electronic idle stabilization) or with an ESV unit (electronic ignition retardation).





# After-sales Service

## Motor Vehicle Service Information

Only for use within the Bosch organization. Not to be communicated to any third party

INCORRECT DISPLAY OF ROTATIONAL SPEED AND  
DWELL ANGLE ONLY WITH TRIGGER BOXES  
0 227 100 ... (TCI-i, TCI-h) WITH CURRENT  
LIMITATION

VDT-I-Gen. 030 En  
6.80  
Supersedes Ed. 3.80

For additional information see VDT-I-Gen. 032 En

### 1. General

In comparison with conventional ignition systems, transistorized ignition systems with current limitation have different primary voltage characteristics. During the dwell period the voltage at terminal 1 of the ignition coil may assume values from 1.5 V to battery voltage (or greater). This may lead to an incorrect display of rotational speed and dwell angle when testing the ignition system. However, there is no functional defect in the ignition system, and, for this reason, the trigger box must not be replaced. Incorrect displays may occur with the testers listed below:

MOT 001.00}	Rotational-speed	KTE 001.00
001.01}	display O.K. with these	001.02
001.02	testers	001.03
001.04		
002.00		

By now, the following vehicles may be fitted with breakerless ignition systems with current limitation:

Audi	(Bosch/Fairchild-ignition system)	Mazda	(Mitsubishi ignition system)
BMW	(Bosch ignition system)	Mitsubishi	(Mitsubishi ignition system)
Citroen	(Delco ignition system)	Nissan-Datsun	(Hitachi ignition system)
Fiat	(Delco ignition system)	Peugeot	(Bosch ignition system)
Ford	(Delco ignition system)	VW	(Bosch/Fairchild ignition system)
General-Motors	(HEI-ignition system)	Bosch transistorized ignition system for retrofitting 0 227 100 920	

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**N8**

Motor Vehicle Service Information

Peugeot



## 2. Test instructions

### 2.1 Rotational speed

Incorrect rotational-speed display can be recognized as follows:

If one starts at the idle speed and slowly increases the engine speed, then the incorrect display can be recognized by an abrupt reduction in the rotational-speed display (e.g. from 2400 min<sup>-1</sup> to 1200 min<sup>-1</sup>).

It is, however, possible to attain correct rot.-speed measurements as follows:

Connect a ballast resistor of 0.9 or 1.0 Ohm (see Fig.) in series in the line to term. 15 of the ignition coil (take care not to cause a short circuit). After the rotational-speed measurement, the ballast resistor must be removed (otherwise starting difficulties and misfiring). Connect tester as per operating instructions.

### Suggestion for user manufacture

Required parts:

- 1 ballast resistor 0.9 Ohm
- or
- 1 ballast resistor 1.0 Ohm
- 2 blade receptacles e.g.
- approx. 0.2 m cable, 1.5 mm<sup>2</sup> e.g.
- 2 insulated clips

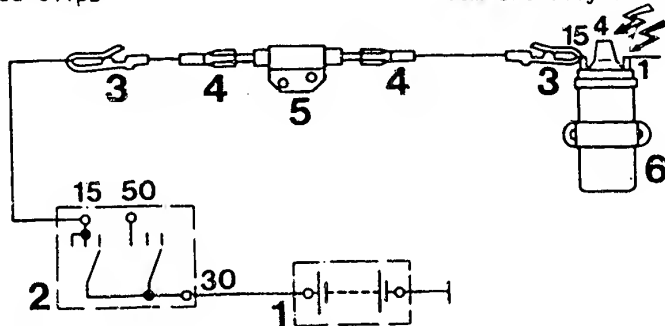
Part No. 0 227 900 002

Part No. 0 227 900 101

Part No. 1 901 355 881

Part No. 6 210 150 150

Commercially available



1 = Battery

2 = Ignition switch

3 = Clips

4 = Blade receptacle

5 = Ballast resistor

6 = Ignition coil

⚡ approx. 400 V

⚡ approx. 25 kV

### 2.2 Dwell angle

The dwell angle is electronically controlled. A measurement of the dwell angle is no longer performed.

### 2.3 Ignition point

is displayed correctly. Connect tester as per operating instructions.



# After-sales Service

## Motor Vehicle Service Information

Only for use within the Bosch organization. Not to be communicated to any third party.

### MOTORTESTER CONVERSION

VDT-I-Gen. 032 En  
6.80

Incorrect display of rotational speed,  
dwell angle and ignition point  
only with trigger boxes  
0 227 100 ... (TCI-i, TCI-h) with current  
limitation

For additional information see VDT-I-Gen. 030 of 6.80

Re.: Motortester EFAW 268  
268 S 10  
269  
214 B  
AE 2000

### 1. General

Please make sure that the above-mentioned motortesters in your workshop and at your customers (e.g. motor vehicle workshops, oil companies, gas stations, vocational schools etc.) are converted. The conversion is subject to payment and is carried out by the K7 after-sales service of the responsible BG. The standard time is 15 work units (with fitting of switch).

### 2. Why motortester conversion?

In comparison with conventional ignition systems, transistorized ignition systems with current limitation have different primary voltage characteristics. During the dwell period the voltage at terminal 1 of the ignition coil may assume values from 1.5 V to battery voltage (or greater). This may lead to an incorrect display of rotational speed and dwell angle as well as to incorrect triggering of the meter when testing the ignition system. There is, however, no functional defect in the ignition system, and, for this reason, the trigger box must not be replaced. Since, with the above-listed motortesters, the timing light is triggered by the signal path dwell angle - meter, this incorrect triggering also leads to incorrect flashing and thus to an incorrect display of the advance angle.

### 3. Conversion measures

The situation is to be remedied by modifying the wiring of the testers so that the timing light is triggered by the clamp-on induction pickup and the pulse shaper stage.

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**N10**

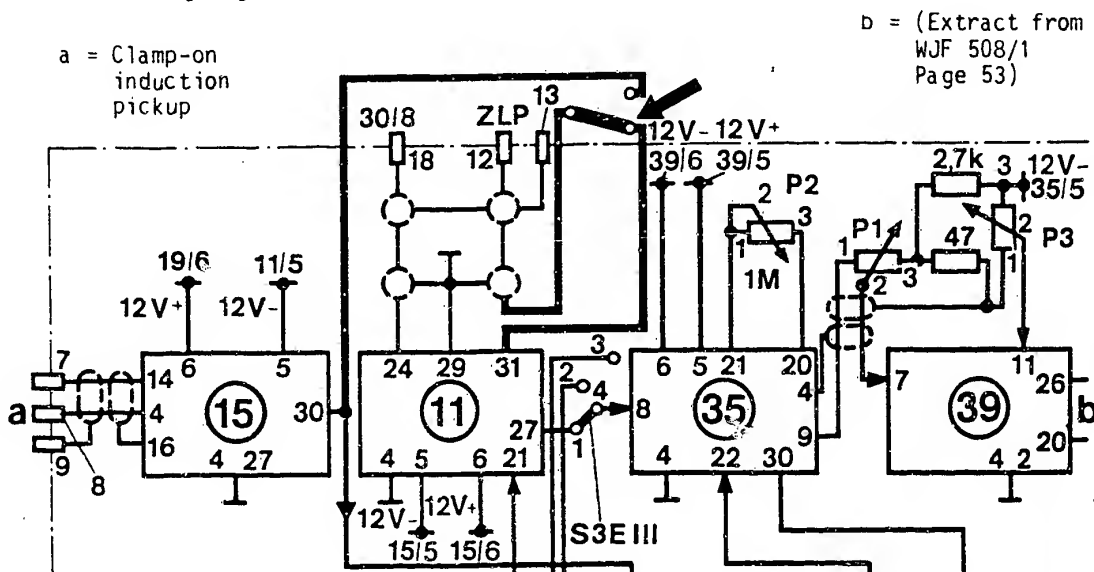
Motor Vehicle Service Information

Peugeot



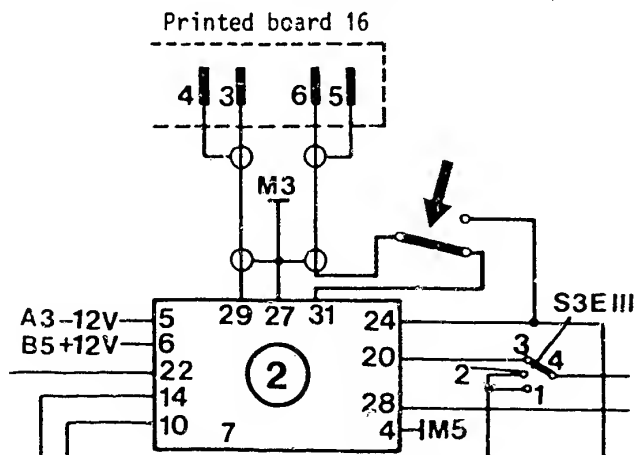
Remove the line of the ZLP\* from pin 31 of printed board 11 (coupling stage) and connect to pin 30 of printed board 15 (pulse shaper stage) via a switch with change-over contact (e.g. 0 341 500 803). In addition, a new line must be connected from pin 31 of printed board 11 to the other contact of the switch with change-over contact. Arrow points to switch with change-over contact.

\* ZLP = timing light



## EFAW 214 B

Remove the line from terminal 6 of printed board 16 to pin 31 of printed board 2 (coupling stage) and connect to pin 24 of the same printed board via a switch with change-over contact (e.g. 0 341 500 803). In addition, a new line must be connected from pin 31 of printed board 2 to the other contact of the switch with change-over contact. Arrow points to switch with change-over contact.



By fitting the switch with change-over contact in the front panel of the motor-tester, it is possible to switch over from standard ignition systems to those with current limitation. We recommend that the switch positions be marked correspondingly: e.g. "standard" - "current limitation". These conversion measures have already been published in the K7 information sheet KJF 28/7911.



#### 4. Test instructions

##### 4.1 Standard ignition systems

Switch position: "standard"

All other tester connections as per operating instructions.

##### 4.2 Ignition systems with current limitation

Switch position: "current limitation"

In order to trigger the timing light, the induction-type pulse generator (clamp-on pickup or red pickup) must always be connected during the measurement.

The selector switch for ignition systems built into the motortester must be switched to standard coil ignition (not to TCI) with these ignition systems.

All other tester connections as per operating instructions.

The dwell angle is electronically controlled. A measurement of the dwell angle is no longer performed.



# After-sales Service

## Motor Vehicle Service Information

Only for use within the Bosch organization. Not to be communicated to any third party.

TESTS ON ELECTRONIC IGNITION SYSTEMS  
(TCI, TZ)  
TESTER INSTRUCTIONS

VDT-I-Gen. 035 En  
3.1981

The following tests are listed in older and current Tester operating instructions or in Trouble-shooting with the oscillograph:

- "Separate ignition coil test" (concerns EFAW 213, 214, 268, AE 2000).
- "Calculating the "ignition voltage reserve"" (concerns EFAW 213, 214, 268, AE 2000 and MOT series).
- "Intensified insulation test" (concerns EFAW 213, 214, 268, AE 2000 and MOT series).

Nowadays transistorized ignition systems deliver more than 30,000 V secondary voltage.

To avoid damage to ignition coil, ignition cable and ignition distributor by voltage flashovers, the tests listed above should not be carried out on transistorized ignition systems.

The contents of this Service Information has already been published in the K7-Information K7-VJF 17/8012.

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**N13**

Motor Vehicle Service Information

Peugeot



# TABLE OF CONTENTS

<u>Section</u>	<u>Coordinates</u>
Structure of microfiche .....	A 1
1. Special features .....	A 2
2. Test specifications .....	A 2
3. Electrical terminal diagram .....	A 4
4. Installation position of components .....	A 6
5. Necessary test equipment, aids .....	A 18
6. Danger of accident on electronic ignition systems .....	A 21
7. Incorrect indication of engine speed, dwell angle and ignition point .....	B 1
8. Important vehicle information .....	B 2
9. Trouble-shooting .....	C 1
Direct trouble-shooting chart f. <u>ignition</u> ..	C 3
Direct trouble-shooting chart f. <u>knock</u> <u>control</u> .....	C 7
Detailed trouble-shooting program for ig- nition and knock control if primary signal/ ignition spark present .....	C 13
Detailed trouble-shooting program for ignition and knock control if primary signal/ignition spark <u>not</u> present .....	F 1





## Table of contents (continued)

<u>Section</u>	<u>Coordinates</u>
Technical Bulletin (Danger of accident) .....	N 1
Technical Bulletin (Influence of electrical and electronic systems on heart pacemakers) .....	N 3
Technical Bulletin (Warranty instructions) .....	N 5
Technical Bulletin (New designations f.ignition systems) .....	N 6
Motor Vehicle Service Information (Incorrect indication of engine speed and dwell angle) .....	N 8
Motor Vehicle Service Information (Motortester conversion) .....	N 10
Motor Vehicle Service Information (Testing electronic ignition systems) .....	N 13



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